NOVEMBER 1956

NFPA FIREMEN

SIXTY-FIRST YEAR • NATIONAL FIRE PROTECTION ASSOCIATION

VOLUME 25, NUMBER 11, COPYRIGHT 1956 NATIONAL FIRE PROTECTION ASSOCIATION PRINTED IN U. S. A.

Miami Welcomes 83rd I.A.F.C. Conference *See pages 16 and 17*

The Adoption of Fire Protection Standards in Law *See pages 18 and 19*

Building Access and Ventilation *See pages 22 and 23*

CARPENTER LIGHTS

SPOTLIGHTING FOUR GOOD REASONS WHY EVERY FIRE DEPARTMENT NEEDS THEM

1 To clear the way!

Two of the many types of CARPENTER Warning Beacons are illustrated here. Above is the "WIG-WAG" REDHEAD . . . an oscillating beam sweeps the way. Six or eight inch diameter available.

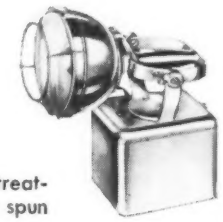
At left is the RAD FLASHING AUTOMOTIVE BEACON. Powerful, half-mile range in all directions from its 5⅛" Fresnel Beehive Dome in red, blue, amber, or combinations.

NEW! The RAR ROTATING AUTOMOTIVE BEACON is newly designed. High-intensity, sealed-beam spotlight rotates horizontally to project its powerful beam through a full 360°. Mounts snuggly on any roof contour or use as stationary beacon. Sturdy, sim-chrome aluminum construction.

Size A — 6, 12, or 115 volt, 11" x 10" high... $62.50
Size B — 6 or 12 volt, 7¼" x 6½" high..... $49.50

2 To see danger!

When the need is for a portable searchlight or work light, CARPENTER'S "PORTALITES" are highly recommended. Standard equipment in most fire departments, they are built for longer life, dependability, and rough treatment. Beautifully wire-brushed, cast or spun aluminum throughout. Illustrated model has self balancing handle and rechargeable battery, two-way switch giving choice of mile-range searchlight or 20 hour continuous work light. Many other rechargeable and dry cell battery types available. Send coupon for details.

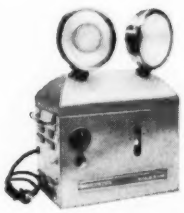


3 To warn of danger!

Protect men, equipment, and the public from injury, with CARPENTER WARNING BEACONS. The RHD FLASHING HIGHWAY BEACON shown here will protect fire hose and has other emergency applications. Powerful beams are visible for a half mile in any direction. Fresnel Beehive Dome in Red, Blue, Amber, or combinations. 72 hours continuous light . . . much longer if used intermittently. Other models available, including Neon types for 100 days and nights per battery.

4 To protect property!

When your recommendation or advice is sought for automatic emergency lights in places of business, public assembly, or industrial plants, etc., remember "Watchmaster" AUTOMATALITES. Instant, automatic illumination for large areas or pinpointing of critical control sectors. The highest quality at the lowest practicable price. A complete line is available for all applications including explosion-proof, remote control, hospital lights, etc. Send coupon for literature.



CARPENTER Manufacturing Company

218 BRADLEY STREET
SOMERVILLE 45, MASS.

Mail coupon for details →

Send more information about _____

Name _____ Title _____

Address _____

IN CANADA — NORTHERN ELECTRIC CO.

CONGRATULATIONS

IAFC

The International Association of Fire Chiefs is to be commended for the splendid work it is doing toward the advancement of the Fire Service.

The Bi-Lateral Fire Hose Company says:

"Every Fire Chief should be a member of IAFC"

ALABAMA, TUSCALOOSA
Sam Davis
1300 10th St.

CALIFORNIA, ENCINO
Dick Cornell
5126 Encino Ave.

COLORADO, DENVER
Paul Nelson
Nelson Fire Equip. Co.
920 Inca St.

CONNECTICUT, OLD GREENWICH
Orville A. Sawyer
P. O. Box 73

FLORIDA, JACKSONVILLE
W. Q. Dowling
P. O. Box 6338

ILLINOIS, BARRINGTON
Great Lakes Fire Equip. Co.
Michael Dalton

INDIANA, INDIANAPOLIS
Midwest Fire & Safety Equip. Co.
1605 Prospect Street

IOWA, BELLE PLAINE
Earl Byers
710 17th Street

KENTUCKY
James Gore
Box 335
Collinsville, Ill.

MAINE, WINTHROP
Don Blanchard
Blanchard Associates, Inc.

MASSACHUSETTS, MEDFIELD
Charles H. Clougherty Co.
39 Miller Street

MICHIGAN, BENTON HARBOR
Joseph M. Platte
1461 Ogden Avenue

MINNESOTA, MINNEAPOLIS
C. F. Coyer
2426 Clinton Ave., 5

MISSOURI, VERSAILLES
L. W. Graves
Interstate Fire Equip. Co.
Rockledge — Lake Road No. 16

NEW JERSEY, KEARNY
T. F. Murphy
9 Livingston

NEW JERSEY, LAUREL SPRINGS
Nat Alexander Co., Inc.
White Horse Pike U. S. Rt. 30

NEW YORK, ELMIRA
W. J. Lawless
207 W. Third Street

NORTH CAROLINA, RALEIGH
Otto C. Wipper
P. O. Box 1704

OHIO, COLUMBUS
Birch Fire Equip. Co.
W. L. Birch
2148 E. Livingston Ave.

OREGON, PORTLAND
Wilco Fire Equip. Co.
1123 S. E. Market St.

TEXAS, DALLAS
Jno. T. Hanway
6403 Goliad

UTAH, SALT LAKE CITY
Universal Safety & Fire Equip. Co.
727 South West Temple St.

WISCONSIN, MADISON
James A. Fenton
114 Merlham Drive

BI-LATERAL'S DISTRIBUTORS AND DEALERS throughout the country join the Bi-Lateral Fire Hose Company in their full cooperation with INTERNATIONAL at all times.

BI-LATERAL FIRE HOSE CO.
20 NORTH WACKER DR.
CHICAGO 6, ILLINOIS
Sustaining member of IAFC

for extra
flexibility plus
higher pump performance
specify the

BARTON-AMERICAN

Duplex-Multistage

CENTRIFUGAL FIRE PUMP

TYPE DMA

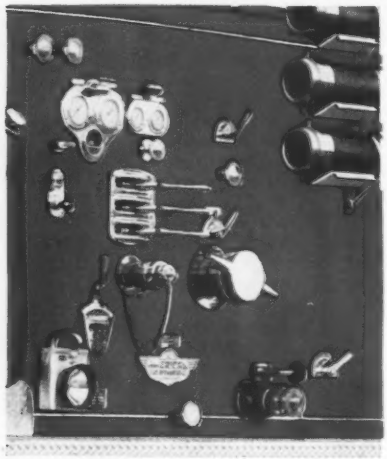
AT THE I.A.F.C.
CONFERENCE —
VISIT BOOTH 49

- Midship Mounted
- Underwriters' Tested

SUPERIOR DESIGN IN **ONE** UNIT GIVES YOU **TWO** INDEPENDENT PUMPS WITH **THREE** PRESSURE AND VOLUME SELECTIONS.

PUMP MANUFACTURERS SINCE 1873

AMERICAN MARSH PUMPS



A typical pump panel. One lever gives you instant selection of *Capacity-Pressure-Series* operation—a Duplex Pump feature.

This bulletin will interest
MEN WHO KNOW FIRE PUMPS
(and those who want to know more!)

With clear text, pictures and diagrams, this new bulletin shows *why* the Barton-American Duplex-Multistage Fire Pump is *different* . . . *how* it was engineered to give you *superior* performance . . . and be *easier* and *faster* to operate.

In *one* unit, this midship centrifugal gives you *two* independent pumps with separate shafts and gears. By moving a *single* lever, you can choose any of *three* pressure and volume selections without touching a valve . . . all at engine speeds lower than 37 MPH road speed!

That's just a sample. We repeat—this bulletin will interest you!

Write Today for Bulletin 8733.

AMERICAN-MARSH PUMPS

BATTLE CREEK **MICHIGAN**

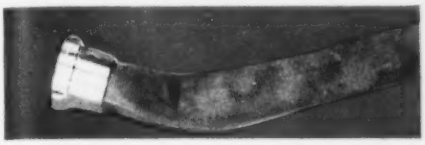
In Canada: American-Marsh Pumps (Canada) Ltd., Stratford, Ont.

NOW! 1½ INCH DOUBLE JACKET MUNICIPAL FIRE HOSE in 100-FOOT LENGTHS!

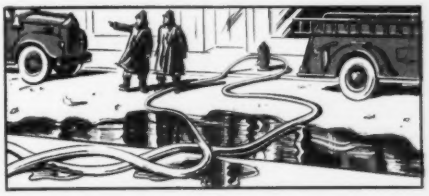
It's new "Quaker 100"—a 600 lb. hose. And it's quick drying, easy to pack and fold

● "Quaker 100" is made from extra-long staple cotton, chemically treated to keep its flexibility and reduce elongation. It is exceptionally light and strong.

LIGHT WEIGHT. One coupled length of "Quaker 100" weighs only 34½ lbs., as opposed to a weight of 51 lbs. for two coupled 50-foot lengths of our popular Delaware brand.



EXTRA STRONG. The specially treated cotton, which supports the "Dacron" filler cords, provides at least 10% more strength in each warp strand woven into the jacket. (Average burst pressure per three foot length is 1200 lbs.)



QUICK DRYING. "Quaker 100" actually absorbs 25% less water than the conventional 600 lb. dacron filler hose. "Quaker 100" packs and folds in less time and space.

GOES INTO ACTION QUICKLY. 100 feet long, "Quaker 100" reduces by 50% the danger of couplings pulling off or becoming snagged. The hose "corners" easily.

"SMOOTH-AS-GLASS" WATERWAY. The close picks per inch of the weave reduce friction loss to a minimum (as do 50% fewer couplings).

One look at new "Quaker 100" Double Jacket municipal fire hose is all you'll need to see the savings . . . to see how easy it is to use and maintain. Why not take that look soon?

If you'd like the name of the Quaker or Quaker Pioneer Distributor nearest you, just write. He can save you time, trouble and money. Write, too, for free brochure on "Quaker 100".

Quaker HKP

H. K. PORTER COMPANY, INC.
QUAKER RUBBER DIVISION
PHILADELPHIA 24, PA.
QUAKER PIONEER RUBBER DIVISION
PITTSBURG, CALIF.

1

look to

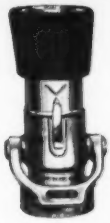
ELKHART FOR LEADERSHIP

and to many "firsts"

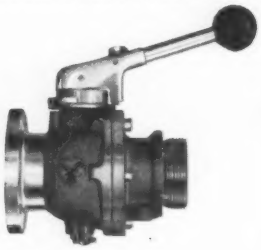
that prove it...

X-Trude Coupling

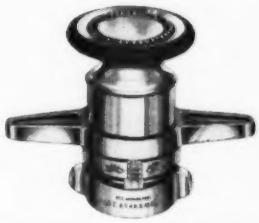
Elk-Air Air Pressurized
Water Fire Extinguisher



Select-O-Stream
Mystery Fog Nozzle



2½" Quarter Turn
Ball Type Valve



Jumbo Mystery Fog Nozzles

Apparatus
Suction Gate Valve

Tri-Loc
Nozzle Holder

JK 2500 Jumbo King
Mystery Fog Nozzle

More than half a century of fire fighting progress

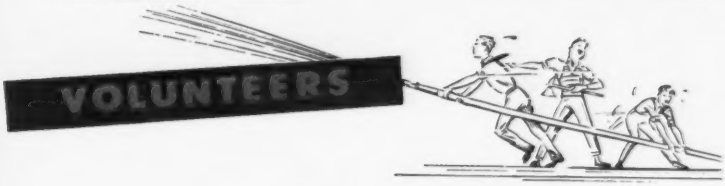
ELKHART BRASS MFG. CO., Inc.

ELKHART, INDIANA

For the smaller community--
POSITIVE, INSTANT CONTACT with the

FIRE CHIEF

FIRE DEPARTMENT



VOLUNTEERS

RESCUE SERVICE

Provide your community—your property owners and your children — with all of the advantages of a big city fire alarm system.

At a cost well within reason, you can have a municipal fire alarm box system that will immediately announce the *location* of a fire.

Best of all, the smaller community can now get the basic fire alarm protection it needs, and extend the system circuit-by-circuit to avoid heavy investment at any one time.

As you know, almost every big fire *starts* as a *small* fire. Prevent delays with a positive, dependable fire alarm box system.

THE GAMEWELL COMPANY
NEWTON UPPER FALLS 64, MASS.
In Canada: Northern Electric Co., Ltd., Belleville, Ont.

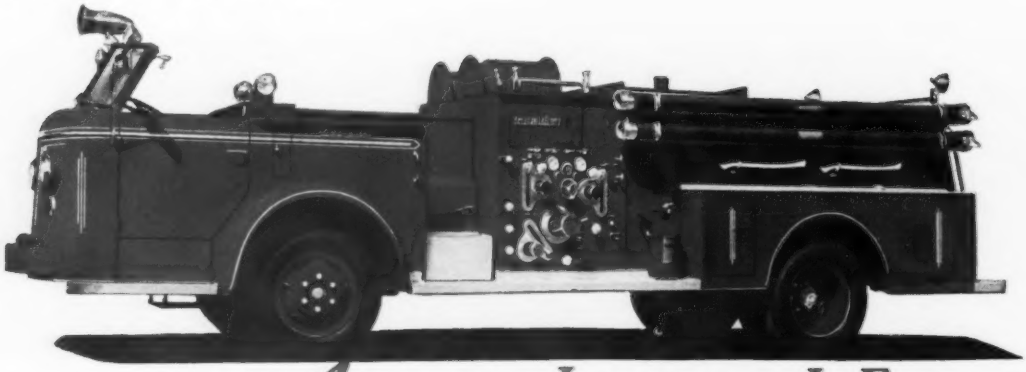
Keep small fires from becoming big fires — with an adequate fire alarm box system.

GAMEWELL®

THE BOX IS POSITIVE
Reduces Human Error

The NEW . . ALL NEW "Series 800"

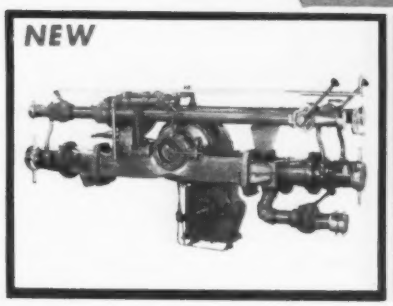
The Custom . . .



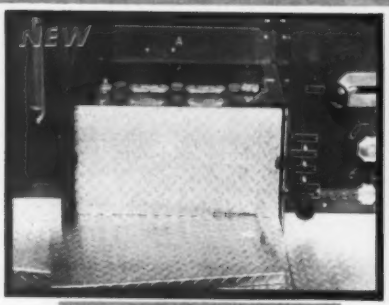
Again AMERICAN LAFRANCE

fire engine design, performance

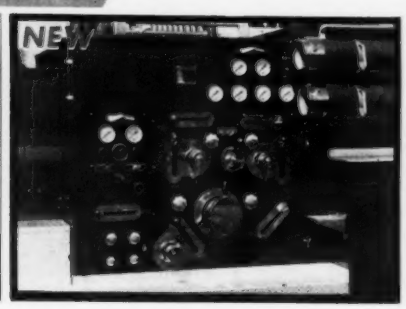
The new American LaFrance 800 Series Fire Engines are new from front bumper to rear step. The Cab-Ahead-of-Engine design has proven best for safety and driver's visibility through eight years of fire service. The chassis is completely new with heavier frame, longer springs and direct acting shock absorbers. Short turning radius and easy steering are important features in the new design. Utility, always important, is increased by greater hose capacity of the 73 inch wide body, and the addition of seven enclosed compartments and two open compartments to protect all the equipment. The standard water tank has been increased to 300 gallons (U.S.) capacity.



New parallel-series TWINFLOW centrifugal pump, more water per engine horsepower, longer service life with decreased maintenance. All controls positive operation. Gated suction inlet optional on specification.



New battery location away from engine heat; short leads for high voltage; accessible for inspection and testing; 12 volt heavy duty 150 amp. hour battery for all electrical requirements.



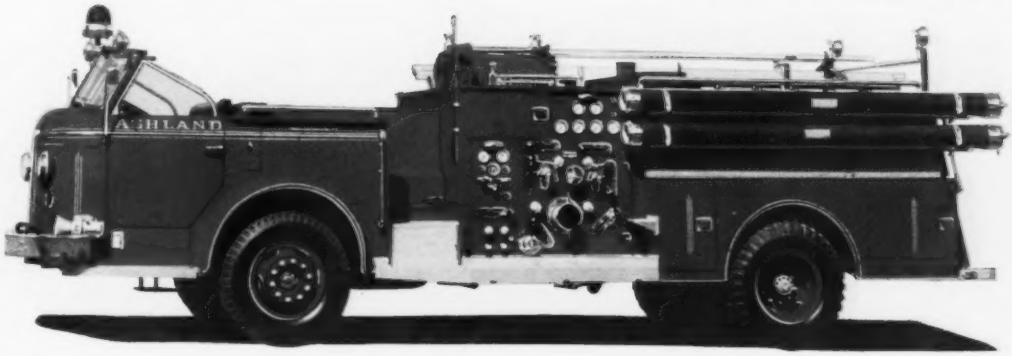
All gauges, valves and pump controls grouped for best operation; properly identified with permanent plates and protected from freezing. Extra gauges and gates shown are optional equipment as specified.

See one of these new American LaFrance "800 Series" Fire Engines in Space A and get complete details in our booth No. 62 at the I.A.F.C. Convention in Miami, November 12, 13, 14, 15.

AMERICAN LAFRANCE

FIRE ENGINES

The Deluxe...

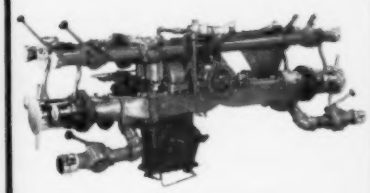


sets a new high standard in and utility . . .

The American LaFrance high standards of quality in materials, design and workmanship characterize the new 800 Series Fire Engines. Every model, either Custom or Deluxe, is identical in chassis construction. The Deluxe differs only in finish (lacquer), style of trim, compartment detail and bronze pump housing.

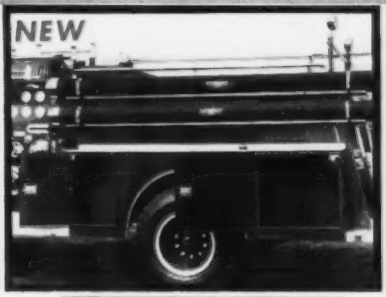
Seven engines provide a complete range of power selection for top performance under all service conditions. Two engines are V-12 and five engines are 6 cylinder. The new TWINFLOW pump is available in all standard N.B.F.U. Class A capacity ratings and is now proving its high performance ability in fire service use. Higher pressure performance up to 600 p.s.i. pressure is provided on specification.

NEW



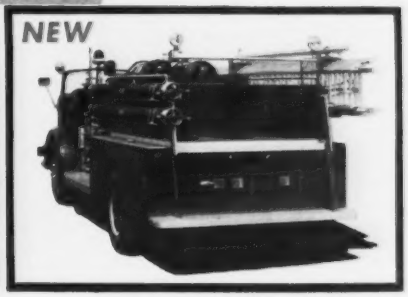
TWINFLOW pump has optional controls from right or left side of apparatus. All discharge gates controlled from operator's panel. All lubrication from operator's panel. Gated suction inlets optional on specification.

NEW



Four large enclosed side compartments for masks, inhalators and other equipment requiring weather protection. Deluxe specifications include waterproof doors with lights in compartments controlled by door operated switches.

NEW



Two large enclosed compartments provided at rear. Each compartment adequate for portable generator, portable pump or other equipment. Center compartment enclosure and rear discharge outlets shown are optional.

AMERICAN LAFRANCE CORPORATION

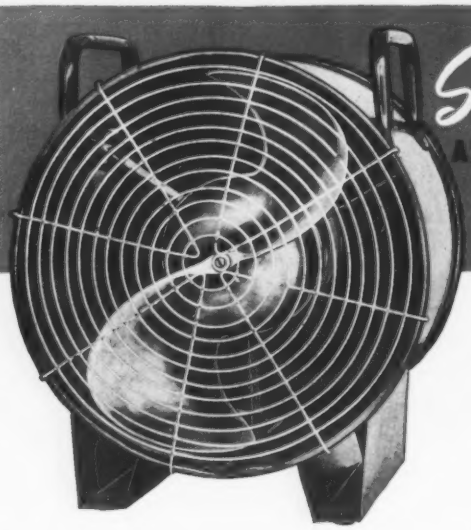
ELMIRA, NEW YORK, U. S. A.

LAFRANCE FIRE ENGINE—FOAMITE LIMITED

TORONTO, 9, ONTARIO, CANADA

Super Vacuum ..... THE ANSWER TO YOUR SMOKE EJECTION PROBLEMS

● REVOLUTIONARY NEW PRINCIPLE INCREASES FIRE FIGHTING EFFICIENCY!

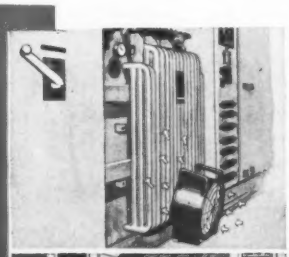


● The Super Vacuum Smoke ejector is a powerful portable fan unit designed especially for fire departments. This design is a new and revolutionary principle in moving air. Several thousand Super Vacuum Smoke ejectors are in use throughout the United States and Canada. Controlled ventilation is new and very necessary in fire fighting. Years of service and satisfied users are your best guarantee for any merchandise.

THE HEART OF THE SUPER VACUUM

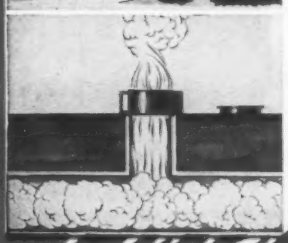
● The secret of Super Vacuum is the patented fan blade. Conventional fans chop the air and push it back. Whereas the Super Vacuum fan blade is a perfect spiral air screw which creates a partial vacuum, suction is created over the entire face of the blade and the air or smoke is discharged in a high velocity spiral. There are no dead spots—that is why Super Vacuum outperforms other fans twice its size.

TYPICAL USES

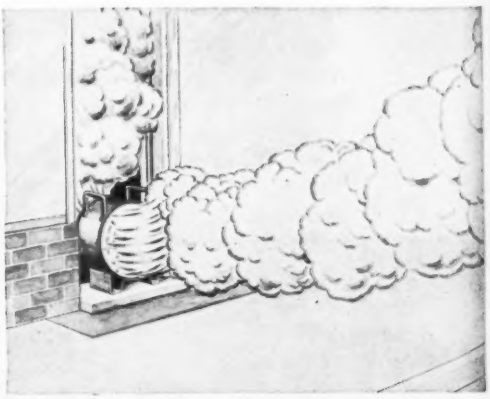


● Super Vacuum ejectors are often used by fire departments in emergencies to cool generators, pumps and motors. The strong discharge of air quickly reduces the temperature to a safe level.

● Fresh air can be forced into a building with or without a deodorant By applying deodorant to a pad and attaching it to the intake face of the Super Vacuum fan, air is pulled through this pad and forced throughout the building. Smoke odors are dissipated and soot is settled.



● Poisonous or explosive gases can be effectively removed from sewers, basements, tunnels and mine shafts with the Super Vacuum Fans. They can be used in any position horizontal or vertical.



● Smoke ejection is a major problem at most fires. Super Vacuum does it faster, cheaper and more efficiently than any similar device on the market. As a Nationally known Fire Chief said recently, "Smoke ejectors are as necessary as fire hose in fighting fires."

Write for Additional Information or Contact Your Local Fire Equipment Dealer

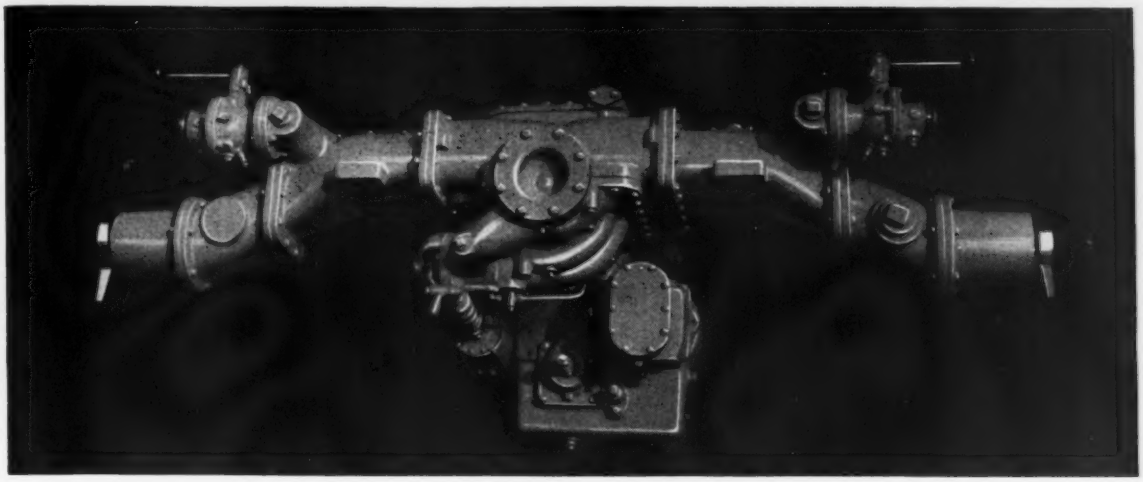
MANUFACTURED EXCLUSIVELY BY

Super Vacuum MANUFACTURING CO., Inc.

319½ East 17th Avenue • Denver 3, Colorado

Completely Modern

HALE QLHD and QL75HD TWO STAGE FIRE PUMPS



UNDERWRITERS' RATING:

- **QLHD . . . . . 500 GPM at 150 lbs.**
- **QLHD . . . . . 600 GPM at 150 lbs.**
- **QL75HD . . . . . 750 GPM at 150 lbs.**

PLUS FEATURES:

LOW OVER-ALL HEIGHT — The low over-all height of the pump above the frame provides substantially more room for tank, compartments, or hose space.

DUAL PRESSURE—VOLUME CONTROL—Push-button and Manual with NEW Visual Indicator which shows operator instantly whether pump is in Volume or Pressure position.

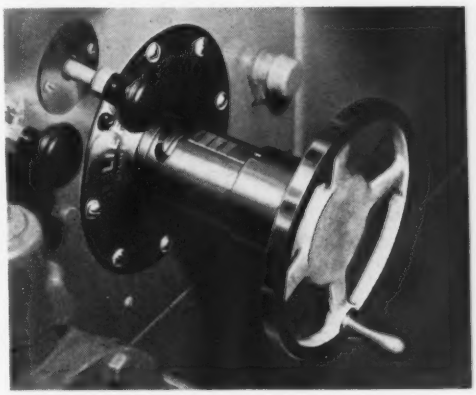
PANEL MOUNTED RELIEF VALVE CONTROL—A convenient wheel on panel makes it easy to set relief valve quickly and accurately. See picture at right.

DEEP DROP TO FIT MODERN CHASSIS — The QLHD and QL75HD Series is designed with a Deep Drop between mounting pads and center line of drive shaft to fit up-to-date truck chassis — an important aid in engineering the pump into the chassis.

EASIER TO SERVICE — The new design makes it convenient to service pump from the bottom for inspection — or minor repairs. Lower half of pump, or whole pump can be dropped down between frame without marring enclosure panels or disturbing gauges or instruments.

DUAL PRIMING CONTROL — (Push-button and Manual); a popular and improved feature.

BUILT-IN SPEED COUNTER — Provides convenient way to measure propeller shaft speeds.



This Hale "QL" Relief Valve Control with handy "Setting" Wheel shown above is now available for all Hale single, 2- and 3-stage Centrifugal Pumps that use a Hale Relief Valve, *regardless of age*. The wheel Control is now standard on all present Hale centrifugal fire engine pumps, and can be easily mounted on all older single, 2- and 3-stage Hale centrifugals in service. It can be mounted directly over the Relief Valve, or Panel-mounted as pictured above, to replace the older style knurled Control.

Write for New Bulletin 334 on HALE QLHD and QL75HD Centrifugal Pumps.
HALE Pumps are Built in all Standard Capacities

HALE FIRE PUMP CO.
CONSHOHOCKEN, PA.

Beautiful!

...and packed with practical, original *American* features that increase your fire-fighting effectiveness!

At the Convention —
see all the practical,
top-quality features of
American Fire Apparatus!

At American, you can select from a wide range of standard or custom-built models tailored to suit the needs of your community. Select the make of chassis you prefer and the body design you like best. Choose the Barton-American Pump you wish from a wide range of Midship models —two-stage, four-stage or the *new* single-stage types—or Front-Mounted Pumps with the *only* positive, inter-locking clutch that can't slip and leave you helpless at a fire.

If you're looking for superior performance, look at American's superior features!

Contact your nearest American Representative soon!

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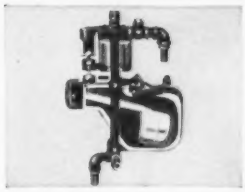

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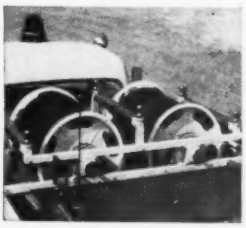

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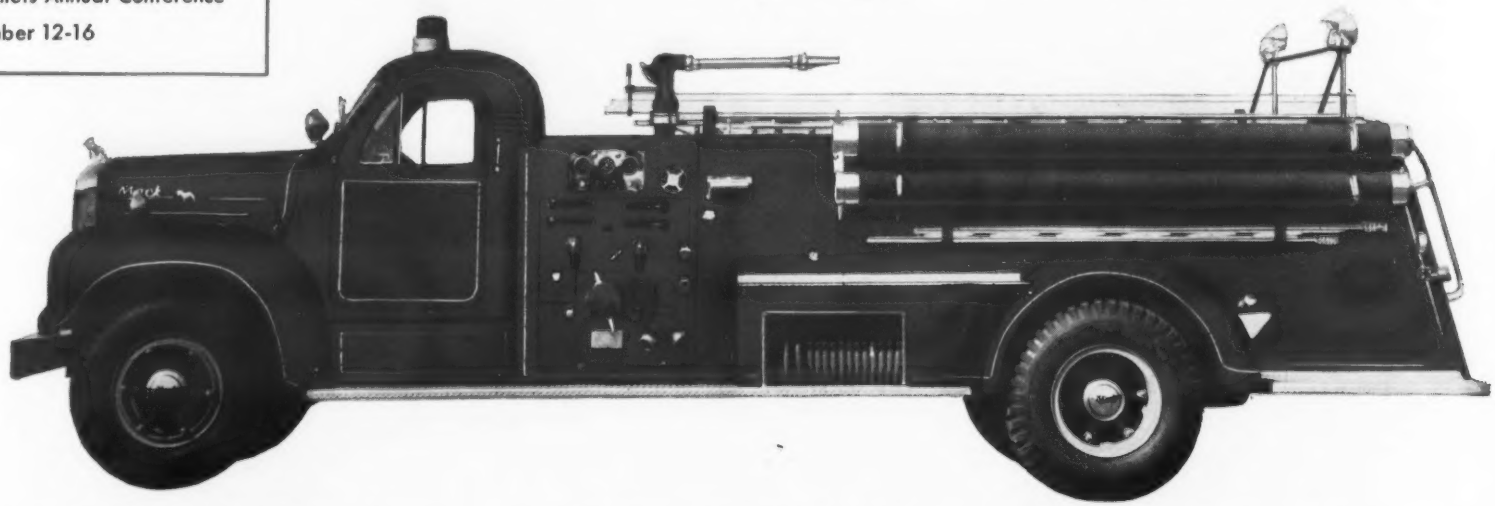

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Firemen

Volume 23 — Number 11

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Cover Photo

The problems of "opening up" are illustrated by the photo on this month's cover, which shows members of the Davenport, Iowa, Fire Department in action on October 9. They responded to this fire which involved a lumber warehouse containing finished millwork, mahogany and other expensive trim lumber. Cause of the fire was believed to be a shorted power saw motor in the millwork section. It was reported that the building lacked automatic fire detection and protection equipment, and that the two-alarm fire led to an estimated loss of $100,000, despite the good ladder work and prompt attack by the fire fighters.

The task of providing adequate ventilation for fire attack and control is fundamental in fireground operation. Yet is is a subject of continual interest and worthwhile discussion for most fire fighters. Readers of this issue will find some particularly interesting information on this subject in the article by NFPA Chief Engineer Horatio Bond "Building Access and Ventilation" on pages 22 and 23. Other problems are discussed by Warren Y. Kimball on pages 20 and 21. (*Cover photo by Herb Sawinski, Davenport "Daily Times."*)

●

The Real Enemy

All fire fighters are interested in the "morale" or "esprit de corps" of their department and most citizens want their fire fighters to be a happy, contented force. However, like the serpent in Paradise, politics sometimes rears its ugly head and may directly affect the personal lives of fire fighters if promotions go to men whom the rank and file feel are undeserving, or if pay and other rewards for labor are withheld.

Griping and dissent is a privilege of democracy, but it is to the credit of the fire service that basically such disagreement has remained above partisan politics and has pursued its ideal of protecting the lives and property of the public. Fire fighters may express irritation and even disgust about policies they feel are not in the best interest of their service and seek redress at the public forum and the polls, but it is to their lasting credit that they realize that their true enemy is "fire" and when the bell hits they invariably overlook these irritations and turn in their best fighting performance.

●

Fall Conference

Fire department members in the Midwestern States still have opportunity to make arrangements for attending the 1956 NFPA Fall Conference in St. Louis, Missouri, on November 26–28. Site of this important meeting will be the Statler Hotel in that city.

Of particular interest to fire fighters will be the "Fire Protection Clinics" held during each afternoon session of the meeting. Members of NFPA technical committees will be available during these periods to answer questions and discuss important fire protection problems. The clinic on Wednesday afternoon, November 28, will feature conferences and question periods on fire department equipment, brush and forest fires, lightning protection and fire brigades and watchmen.

Miami Welcomes the 83rd IAFC Conference

CHIEF Newton L. Wheeler, Sr., Division of Fire, Miami, Florida, will be host for the 83rd Conference of the International Association of Fire Chiefs in that City, November 12–16. Headquarters for the Conference will be the Biscayne Terrace Hotel, located on 340 Biscayne Boulevard at Fourth Street. Manufacturers of equipment and apparatus for the fire service will exhibit their products in the Dinner Key Auditorium. This is only a ten minute ride from the headquarters hotel, and members of the Miami Fire Department will furnish transportation for the visiting chiefs who want to see the displays of new fire equipment.

Each year FIREMEN magazine devotes a special article to the fire department which assumes the role of host for the IAFC Conference. Many visiting fire chiefs like to visit the headquarters station in the city to meet the officers and men, to examine the fire stations and apparatus, and to exchange ideas and information. The Miami Fire Department, under Chief Wheeler, certainly deserves such attention.

This renowned resort city in the "off season" has a population of approximately 260,000. However, during the winter months there is an annual influx of more than 3,500,000 tourists. The rapid growth of the municipality during the 1920's and '30's brought many sections of substandard construction. These buildings are being replaced periodically by new fire resistant construction, but they still pose a fire protection problem to Miami's fire fighters.

Chief Wheeler has commanded this fire force of 617 officers and men since July, 1953. The fire force has undergone considerable expansion during the past ten years. Shortly after the close of World War II, the department had 230 men working a two platoon system in an 84-hour week, that is, 24 hours on duty and 24 hours off duty. The fire fighters manned 15 pieces of apparatus, including 9 pumpers, 4 aerial ladders, a hose wagon, and a rescue truck. There were 9 fire stations in the city at that time.

Now there are 14 fire stations with another to be constructed in the near future. Fire department members operate under a three platoon system — a 56-hour week with 24 hours on duty followed by 48 hours off duty. The department has 26 pieces of apparatus including 11 pumpers, 2 "dual-purpose" hose wagons, 7 aerial ladders, 5 chemical trucks, and an emergency truck.

Of particular interest to visiting fire chiefs will be the chemical trucks or "light attack" units operated by Miami fire fighters. These are built on commercial 1½-ton chassis and have 500-gpm pumps and 500-gallon tanks. Each has three pre-connected 1½-inch "jump" lines 200 feet long, with combination fog-straight stream nozzles. The chemical trucks are equipped with the "Miami Proportioner," designed by Captain S. B. Pelot and other members of the Department. This consists of a 10-gallon supply tank and proportioning equipment attached to the apparatus, with valves and piping arranged so that a wetting agent can be introduced into any or all of the outlets supplying the 1½-in. lines. The wetting agents are used for initial attack on building fires in residential and light industrial districts. These special attack units are backed up and supplied by engine companies. They have proven particularly effective in the "hot spots" or major fire areas of the city where a majority of the construction happens to be one- and two-story frame buildings. In much of these areas less than 10 feet of ground space exists between buildings.

The Department is well-supplied with radio and other communications equipment. Two 250-watt transmitters are located on the top floor of the Court House building in the City. A 20-watt transmitter-receiver is in fire alarm headquarters, while others of the same capacity are in each fire station and Chief Wheeler's office. In addition, trans-

Chief Newton L. Wheeler, Sr., of the Miami, Florida, Fire Department.

Miami's Central Fire Station located at West Flagler Street near S.W. First Ave.

Take in these Highlights of the 83rd IAFC CONFERENCE!

Monday, November 12 — **"Integration of Fire and Police Services,"** a lively panel discussion moderated by Chief Wayne E. Swanson of Rockford, Illinois. Afternoon talk — **"Current Developments on Fire Waste Control,"** by NFPA General Manager Percy Bugbee.

"Planning for Major Disasters," another panel discussion, moderated by Chief Henry G. Thomas of Hartford, Connecticut, and featuring FCDA officials and others.

Tuesday, November 13 — Latin-American and NATO countries program in the morning. Afternoon will have a number of feature addresses and a panel discussion on **"Should Paid Firemen Be Permitted Outside Employment?"**

Wednesday, November 14 — Talks on training and a panel discussion of problems of volunteer fire departments. Afternoon talk — **"A Pattern for Preparedness,"** by Chief George E. Hink of Philadelphia, Pennsylvania. There will also be two panel discussions in this session.

Thursday, November 15 — Business sessions and conclusion of Conference.

mitter-receiver units of 10 to 30 watt capacity are used on fire apparatus. A teletype system is also used for alarm transmission. Transmitting and receiving units are in fire alarm headquarters, in the Chief's office and in each fire station, and a receiver is in the Fire Prevention Bureau's office.

Each member of the fire department is issued a uniform and bunker (turnout) equipment by the City. Attached to each bunker coat is a special pouch which holds an all-service gas mask used to protect the fire fighter against smoke and steam during close-in fog fire fighting. (In January, 1953, FIREMEN magazine reported on the athletic and fire fighting training program conducted for Miami fire fighters. That report stated that since November, 1949, not a man had been "knocked out" by smoke or toxic gases during a fire.) The gas mask canister is held in the pouch by means of retaining straps attached to the pouch and criss-crossed over the canister to snap securely to the pouch front. The corrugated tube connecting mask and canister goes over the left shoulder and around the neck, and the headband is held by a snap on the right shoulder. A Miami tent and awning company made and installed the pouches on the coats.

As reported in an earlier issue of this magazine, during initial attack on smoky fires, all men wear their masks. When the air clears, they may remove them at their own discretion unless an officer orders otherwise. A majority of these masks is equipped with speaking diaphragm face pieces.

The Department also uses demand-type masks and oxygen breathing apparatus in addition to the breathing and resuscitation equipment available for rescue squads.

For several years now Miami has been using a telephone alarm system. This features a number of small telephone boxes painted red and green to signify that fire and police calls can be transmitted over the same phone. It was installed by the Southern Bell Telephone Company on a rental basis and is connected directly to the fire alarm office. When a telephone is lifted from the hook at one of these boxes, a buzzer sounds in the fire alarm office, and the red light flashes below the box number. The alarm operator then plugs into the jack and communications are established for the dispatch of fire apparatus.

The Miami Fire Department is looking ahead to the establishment of a new Civil Defense Training Center some ten miles southwest of the city. Plans have already been approved for this control center and rescue training facility which will be used to provide field training for various volunteer services of Civil Defense. At a later date if Federal funds are authorized, a fire fighting training facility will also be added. It will include an aircraft crash training area, pumping and drafting facilities, an electrical transformer, and special training sites for flammable liquids and liquefied petroleum gas fires. Initially, the center will be devoted to rescue training, and a special five-story building will be constructed for this purpose. The project will be financed by matching funds from the Federal Civil Defense Administration, Dade County, and the City of Miami. A majority of the instructors will come from the Miami Fire Department.

(*Right*) Three of the Department's chemical "attack units" shown on the waterfront.

The Adoption of Fire Protection Standards in Law

Fire chiefs and fire marshals will be interested in these suggestions by NFPA Technical Secretary Robert S. Moulton on how practical fire protection standards may be adopted in laws and ordinances.

HOW can we adopt NFPA standards in law, by reference, automatically keeping them up to date? This question is asked frequently of the NFPA Executive Office by men who feel the need for state or municipal regulation of certain fire hazards in the interest of public safety, and who wish to utilize generally accepted National standards as a basis.

The answer is surprisingly simple, for those who will accept it. It is to appoint a fire marshal or other official charged with similar duties, and then specify that no one shall maintain a fire hazard. A very brief law will suffice if handled on this basis.

Under this plan, it is the responsibility of the fire marshal to determine what is a fire hazard, and how it should be dealt with. The fire marshal will quickly find that his best method of operation is to rely for guidance upon published National standards. He should let it be known which standards he proposes to use, and make copies available for reference in his office. In this way, the up-to-date edition of standards can always be utilized. Furthermore, this plan, with no mention of the standards in the law itself, seems completely legal in all jurisdictions.

The difficulty with this plan is that it may take in too much territory, and that in the hands of an incompetent or dishonest official it may not work at all. The answer, of course, is to appoint only competent and honest officials. With incompetent or dishonest officials the results will be unsatisfactory no matter what the law says. If a blanket authority to control fire hazards is considered too broad, the power of the official may be circumscribed by spelling out in detail just what he shall handle.

Will the Official Use Correct Standards?

Whether the official will select the correct standards and apply them intelligently is a matter largely determined by his competence. In the absence of instructions, he may adopt the wrong standards, or amend existing National standards to suit his own ideas. The chances are, however, that he will be forced to use the correct standard and will not amend it, because any other course of action could subject him to all sorts of commercial pressures. In any case, the chances of satisfactory results seem just as good by this method as by any other.

The reasonableness of any standard adopted by reference, no matter by what method, is the determining factor in its application. Courts will generally approve anything which seems reasonable. There should be some provisions in any legislation for review by the courts and preferably for review by some Board of Appeals prior to taking the matter into court. Many controversial cases can be settled through such an appeal procedure.

This discussion would not be complete without some reference to licensing of installers or permits for the installation of flammable liquids. A system of licensing and permits is convenient, but it scarcely seems necessary as regards licensing — except, perhaps, for some special features such as fumigation where it is essential to maintain very rigid control over the operations which might cause serious hazard to life. Ordinary permit provisions are an aid to enforcement, and should be attended by fees sufficient to cover the cost of operations.

Adoption of Complete Standards in Law

For those who do not want to follow the simple method outlined above, there are various other methods of adopting standards by reference.

The time-honored and original method is to adopt the entire text of the standard in law. This is not too bad as far as some simple laws are concerned, but when we get into the more complex ramifications of flammable liquids, chemicals and explosives and other special features, the adoption of a detailed law is quite out of the question from the point of view of printing expense, if for no other. Large cities can perhaps afford the printing expense, but in general it is undesirable from the point of view of revisions. New York City adopted the National Electrical Code and printed it verbatim in 1913, continuing the 1913 code for many, many years, long after it had been superseded by other editions.

Some of our existing regulations are in the form of model ordinances which date back in some cases to an earlier day when the details were not so comprehensive. Such ordinances are satisfactory if frequently amended, but they involve a good deal of difficulty in securing amendment and offer opportunity for introduction of special features to satisfy the needs of local commercial interests and are in general undesirable.

One of the methods quite largely used is the adoption of reference material by title but without any date. This method, for example, is used in the 1956 Fire Prevention Code of the City of Philadelphia. It may be presumed, in case the matter is tested in the courts, that the latest edition of the standard in print at the time of adoption of the ordinance is the one contemplated. However, it is not the intent presumably to follow the original edition and difficulties might occur by this method.

As a matter of fact, at some other jurisdictions, this method of adoption has been declared unconstitutional by the courts, so presumably in such cases other factors have also entered. The Michigan State law adopted the

National Electrical Code without reference to any date and this law was subsequently declared unconstitutional. However, in that case other factors were involved, in connection with electrical inspection, which were obnoxious to various interests.

The Prima-Facie Evidence Method

A method which has been widely advocated by electrical interests is making the National Electrical Code, or some other standard, prima-facie evidence of safe installation. This means evidence sufficient in law to raise a presumption of fact or establish the fact in question unless rebutted. It is difficult to accept the fact that the prima-facie evidence clause is valid without a date on the code adopted, because lacking a date this clause is subject to criticism as an unconstitutional delegation of legislative power, the same as any other method.

A much more serious criticism of the prima-facie evidence method of adoption is that it serves to protect the manufacturer or installer who complies with the code but who may introduce other hazards not covered by the code. An excellent example of this is found in the case of television installations which were not covered in the National Electrical Code when TV was first introduced. The television installer might thereby, under the prima-facie evidence law, plead that the installation was entirely in accordance with the National Electrical Code and hence legal even though it might have some serious differences based on a common-sense appraisal of the situation.

California Method

California and a number of other states have adopted laws making it permissible for municipalities to adopt the uniform building code of the International Conference of Building Officials. This law, which has been followed more or less in a number of states, reads as follows:

"An act relating to the passage of ordinances by cities or counties, and authorizing cities or counties to adopt ordinances relating to building construction, plumbing or electric wiring by reference to published codes on such subjects; provided not less than three printed copies of such code or codes, in book form, have been filed with the clerk.

"The People of the State of California do enact as follows:

"Section 1. Ordinances passed by cities or counties must be posted or published in a newspaper as required by their respective charters or the general laws; provided that ordinances establishing rules and regulations for such matters as the construction of buildings or the installation of plumbing or electric wiring, where such rules and regulations have been published as a code in book form, may adopt such code or portion thereof by reference thereto without further publication or posting, provided not less than three (3) copies of such code have been filed for use and examination by the public in the office of the clerk of such city or county, as the case may be."

This idea might be more effective if it were differently phrased in order to permit adoption by reference of all sorts of documents rather than the restricted list selected. The idea of having three copies on file at the city hall is good. This method, however, requires specific action of the legislative body each time a new edition of the reference material is forthcoming.

The State of Texas, some years ago, adopted NFPA Standards on Liquefied Petroleum Gas including future revisions. It is interesting to note that while this legislation was tested in the State Supreme Court and there upheld, this particular clause did not come into question in any way in the decision. The regulations were found to be reasonable under the circumstances and were accordingly upheld without reference to the adoption of new material by the NFPA in the future which seems to us clearly an unconstitutional delegation of authority (for a detailed discussion, see NFPA *Quarterly*, Volume 30, Page 217).

Georgia Method

Georgia has a rather interesting variant of the adoption by reference where in 1949 the Georgia Safety Fire Law was adopted. This provides that the commissioner shall adopt rules and regulations deemed by him necessary to promote the enforcement of this law, and the same shall have the force and effect of law. The final decision in the promulgation of rules and regulations rests solely with the commissioner, but there is an advisory board which assists him in developing them. The law goes on to state that the commissioner may promulgate reasonable rules and regulations embodying the fundamental principles of the Building Exits Code (1948 edition) dealing with exits, fire resistive partitions retarding the spread of flame and gas, fire prevention installations and all other such devices for the protection of life. Similar provisions are incorporated for large parts of the National Fire Codes, Volumes I and V, which are adopted by reference.

The interesting thing about this law is that the State of Georgia has continued to operate under it since 1949 with no changes. The Georgia State Fire Marshal, who operates under the commissioner, expresses the view that the fundamental principles of the Building Exits Code and the fundamental principles of other referenced documents have not changed since their original adoption in 1949 and that he may accordingly utilize more recent editions as he sees fit. In any case, the law seems to be working quite satisfactorily.

THROUGHOUT the body of the law, there are many awful and wonderful forms of reference to documents of various kinds, references which would seem destined to be held unconstitutional or otherwise fail on the ground of indefiniteness if tested in the courts. That so few of such provisions have been so tested is due to the fact that presumably they are generally accepted standards utilized by the industries concerned and that with few exceptions, there is little incentive for bringing them into court. This is not true where other factors are involved such as peculiar local rules adopted by some enforcing authority for his own purposes, abnormal inspection procedures or other such factors.

In the long run anything that works should be satisfactory as a form of reference. The basic laws of the different states vary and the power and responsibilities of the individual cities thereon likewise vary. The best suggestion that I can make is that you utilize the existing law as far as it is working satisfactorily, but when adopting something new, follow if you can the suggestions in the first part of this article.

MAKING A GOOD JOB OF IT

BY WARREN Y. KIMBALL

More on Mechanical Ventilation
Part III

WE HAVE discussed previously the importance of air as a natural agent in cooling fires and the importance of mechanical ventilation, not only for removing smoke which impedes fire fighting operations, but as a major adjunct in removing heat from fires. Any fire fighter who has had firsthand experience with the work of smoke removal fans in removing excessive heat and smoke from a fire area, such as a basement fire, can testify to this.

Of course, mechanical ventilation equipment must be adequate to be effective, just as hose streams must be adequate. It must be intelligently used. If there is a tough job, several powerful smoke ejectors should be used. In some cases two or three smaller ejectors stacked on top of each other or used in series may be substituted if large capacity fans are not available. Just as hose streams must have proper pressure, just so must electrically driven fans have the proper "juice" to develop their full rpm if their full rated output is to be obtained. Some departments make the mistake of plugging their smoke fans into domestic lighting circuits which may not provide adequate electric current to operate the fan at the proper rpm to get good results. Others make the mistake of using long wires of size inadequate to deliver the required voltage to the device. It is important to have adequate generating capacity and cable to properly supply the devices used. If you are not getting full results from your fans, check on their power requirements and see that they are adequately supplied.

Some departments use a collapsible air tube to channel the smoke out of the fire area. In general, however, this is less efficient and unnecessary, unless perhaps it is desired to remove smoke or fumes from a very confined area.

As mentioned before, a better procedure is to use one or more fans to take out the contaminated heated air and others to bring in fresh air. With this operation no tubes are needed, although some departments carry portable door and window coverings into which fans are fitted just as is done with window fans for ordinary room ventilation, or salvage or roof covers are used to make enclosures.

Power ventilation has the advantage that within reason you can take out the smoke in the direction you want it to go regardless of the natural drafts of the moment. When you remove heat and smoke you are moving soot, carbon, tars and other products of combustion that even in small fires cause a great deal of contamination and smoke damage to contents of buildings. After the fire, the same fans may be used to distribute deodorants which greatly reduce the smoke damage. (See FIREMEN for May, 1950, on use of fans with deodorants.)

Other Uses of Fans

Now the moving of smoke and heat and the bringing in of air are not the only uses of fire department blower fans. These fans may help greatly in dispersing dangerous and combustible fumes. Tests have been reported showing that where an atmosphere contains combustible concentrations of vapors, the agitation of the air by fans greatly reduces the possibility of ignition. The reason for this is not clear, but it is assumed that the air movement dilutes explosive mixtures and possibly atmospheric turbulence interferes with the reaction necessary for ignition and explosion. It has been recommended that fans be started before use in such areas.

Lives have also been saved by fire department fans where seriously ill or injured persons are exposed to fumes from refrigerants and other irritating gases. Prompt use of fans has provided a safe atmosphere for the patient while the hazardous condition is corrected.

Fans and Fog Nozzles

Fire departments that have made extensive use of their fans, (the term "smoke ejector" is very inadequate because it describes such a small part of the valuable work done with power driven fans), have found that great advantage may be obtained by using this equipment in conjunction with fog nozzles. Water particles in fog streams may not have sufficient mass or weight to provide effective range in many fire situations. Also, the stream may not be reaching the fire due to partitions, shelves or other obstructions. Where the fan has a suitable sealed motor, the fog nozzle may be directed through the fan causing water spray to be blown throughout the fire area to places out of direct reach of the hose stream. In addition, where water pressure alone is used to project a fog stream, it is difficult to keep the droplets separate as the water tends to coalesce. Thus aeration and air pressure may be used to further extend the range and effectiveness of spray streams. Water discharged through an adequate fan may be directed beyond the reach of normal nozzle pressure to the desired fire area in a form that can provide more effective extinguishment and purging than by water spray alone. This combines the best advantages of both water and air as extinguishing media. The technique may prove to be a great advance in the art of heat absorption for fire fighting.

Appreciation of this fact has caused engineers designing fire department fog nozzles to begin study of the possible aeration of fog streams at the nozzle somewhat as has been done with kitchen domestic water faucets. It would seem reasonable to suppose that as the advantages of thoroughly saturated air for fire control are more fully appreciated, nozzles may be developed for special situations which may employ built-in air pressure jets to form and project streams of spray. If this sounds fantastic, it might be pointed out that the principle already has widespread use in many industrial applications just as the sciences of ventilation, heating, and air conditioning used certain effective techniques for heat transfer long before the fire service.

Many departments carry good "smoke ejector" fans on their squad or ladder trucks but have not sufficiently studied the subject or developed the necessary operating techniques or made the personnel assignments needed to get maximum use from this equipment. The pres-

ent generation which is just learning some of the techniques necessary for good fog nozzle application may not see it, but if progress continues in the field of fire control, it is quite likely that air moving equipment will earn a larger place beside fire hose and nozzles as an essential tool in fire control.

Some Recommendations

The needed air moving equipment is now available in the well-equipped fire department.

Accordingly, I would recommend the following program:

1. Make certain that several good power fans of adequate capacity and properly supplied with power are carried on the apparatus to each alarm.

2. Make sure that men are regularly assigned to operate this equipment. The fans should be placed in service as quickly as possible and preferably should be set up and operated both to purge heat and smoke and to bring in fresh air while hose lines are being run.

3. See that both the practical and theoretical aspects of powered or mechanical ventilation are included and emphasized in the standard training program for all members of the department. The officers should stress the effective placement of this equipment in their size-up, and the men must develop proficiency in the use of the equipment.

4. Study all cases where fans were used to see how effective they were and whether a better job might have been done with different placement.

Where modern fire apparatus is provided with electric generators, either portable or part of the fire truck equipment, one or more fans should be carried as well as lights and power tools. After all, man has always instinctively used air to remove excessive heat. He blows on food to cool it and blows out a match. Perhaps to paraphrase the old sea chanty, the future chief will sing out, "Give me a fan to blow the fire down!"

Wind Makes Dock Fire Tougher

PORTLAND, Oregon, fire fighters headed by Chief Edward Grenfell, faced some tough problems of fire control when a strong wind swept fire throughout a water front dock area on September 5. A 1,600 ft. long by 100 ft. wide dock was severely damaged and eighteen buildings were involved before the fire was controlled. A 25 mph wind blowing from the east caused flying brands to involve a number of buildings, one of them 9 blocks west of the fire and another ¾ of a mile away near the top of hills west of the area. Actually, fire companies had to patrol 3 miles away from the fire when it was at its height.

The property was owned by the Zidell Machinery and Supply Company and covered a waterfront area of approximately 45 acres in a 2,000 by 1,000 ft. rectangle. The fire started a few minutes after noon and was first discovered by dock workers. Alarm was delayed from ten to twelve minutes, as these men attempted to control the flames with 1½-in. lines and to move autos, trucks, and other equipment out of the danger area.

The fire department already was engaged in combat of two other 2-alarm fires in the city. On receipt of a telephone alarm from the dock, the Department only had two first-alarm companies available for this area. Very quickly, however, three alarms brought twenty-three engine companies, three ladder companies, a rescue truck, and four other units.

Dock scene in early stages of fire as Portland Fire Boat 1 tries to protect "whirly" crane at left. Crane eventually toppled away from water. *(Portland Bureau of Fire Photo)*

Seven additional fire companies were called in on mutual aid and all off-duty Portland fire fighters were summoned for assignment.

The fire, presumably started by a discarded cigarette, was first noticed under the dock, but it spread quickly through the planking and timbers. Before the Fire Department was notified about two hundred of the Company's men were assigned to fight the fire and to move a "whirly" crane from the dock. However fire spread through the oil-soaked and dry-rotted timbers was so rapid that the crane toppled.

Twenty-five buildings in the water front property were heavily involved including four on the dock proper. Intense heat prevented fire fighters from getting close enough to direct hose streams effectively for fire control and protection of exposures. The dock consisted of wood pilings spaced at 4 to 8 ft. intervals, topped by 8 by 8 in. timbers and 10 by 12 in. timbers all covered with a 7 in. deck planking.

While a dry valve automatic sprinkler system was installed under the dock areas and in the dock buildings, this system had not been in operation since last winter when a freeze-up of the equipment occurred. Repairs were not made in the intervening time.

The fire eventually involved an area of about thirty acres, destroyed or damaged two salvage yards, a steel mill, a ferry boat, several warehouses, and caused a property loss estimated at more than $2,000,000.

BUILDING ACCESS and VENTILATION

By Horatio Bond
Chief Engineer, National Fire Protection Association

AFTER every fire, and particularly after every big and disastrous fire, the reasons for the loss of life and destruction of property are relatively easy to identify. Fire protection engineering is the business of identifying these factors before the fire.

A good way to do this is to apply the fundamental engineering technique of considering the problem in a number of parts, each of which is likely to be easier to understand than the whole. For example, consider the contents of a building separately from the building structure, as if they were not in a building at all. Then consider how putting those materials into a building changes the fire problem.

Materials and Their Fire Potential

The rate at which the burning of a material produces heat, and the total heat produced, are fundamentals. They affect the timetable and duration of a fire. They determine the rate at which water for fire extinguishing must be applied and the total amount of water which may be needed. For example, burning rubber tires give off much more heat per pound than do burning ordinary combustibles like wood and paper.

The form of the material is important, whether it is solid, granular, fibrous, liquid or gas. The usual container or covering must be considered. These factors determine the readiness with which the material may be ignited by radiant heat, by sparks or by other small heat sources. They determine the relative difficulties encountered in fighting fire in the material. Fires in certain materials can only be fought by actually pulling apart the piles in which the material would be stored. This overhauling of piles of materials may require cranes, clamshell diggers, bulldozers and other material-handling equipment. This equipment is not often thought of as fire apparatus, but often is most important.

Two other important characteristics of materials must be noted. One is the rate of surface flame spread over the material. For example, flame spreads rapidly in materials with combustible, fuzzy surfaces.

Another is the flying brand hazard which is characteristic of lumber yard fires. The brands spread fires far beyond where they would spread by simple radiation and convection.

There are special problems in connection with fireworks and explosives, with oxidizing materials and acids, and with materials subject to spontaneous ignition (such as soft coal, hay and iron filings). Toxic and radioactive characteristics affect decisions of how certain materials may be stored with respect to fire destruction. Substances like pyroxylin and charcoal are dangerous when subjected to moderate heat. Phosphorous is dangerous when exposed to air or friction and calcium oxide is dangerous when exposed to absorption of moisture. Similar characteristics of other materials must be considered as must the interaction of materials which are safe by themselves but dangerous in combination. Oxidizing materials and organic substances, for example, are dangerous in combination.

The characteristics of materials are of primary importance when one is considering how they may be stored and handled. If, to fight a fire, men must actually get in and pull the burning material apart, the provision of means for access to the material affects the arrangement of piles in outdoor storage and the shape and arrangement of buildings for indoor storage.

The burning of practically all materials changes the form to a gas and the products of combustion are mostly gases which not only are hot but, for the most part, are poisonous. In the case of materials burning in the open, these gases quickly dissipate, but inside a building they must be ventilated. This is only beginning to be recognized by architects and engineers. Nevertheless, it affects primary features of building design such as shape, height and area.

The "Fire Load"

The fire load is a measure of the heat developed by the burning of various materials per square foot of floor area. It provides numbers which, with judgment, may be used by the fire protection engineer. The calorific value of many common materials has been determined and from these the approximate fire load can be derived. Ordinary wood and paper have a calorific value of about 8,000 British Thermal Units per pound. Flammable liquids (like fuel oil, for example) have a value about twice that figure. So when a material burns, the total heat given off can be estimated from the total weight of the material present.

The total heat available is developed faster by quick-burning materials than by slow-burning ones. This is one of the judgment factors which also must be evaluated in using fire load figures. However, the fire load and fire durations to be expected can be roughly related.

For example, a hotel bedroom or a storage garage would be fairly low on the scale. In these, the fire loading would be of the order of 40,000 British Thermal Units per square foot, roughly corresponding to a half-hour fire duration. A drafting room or office occupancy would be at a higher point on the scale, for which fire loading would be of the order of 160,000 British Thermal Units per square foot, and fire duration about two hours. Heavy fire loadings, corresponding to fire durations over three hours would be illustrated by a woodworking shop, 300,000 units per square foot, and a bookstore, 2,000,000 units.

Building Types

The fact that, with judgment, the approximate fire duration can be deduced from the fire loading is useful in determining the building type appropriate for a given occupancy. As a general rule, the fire resistance of the building type is far less important than are the factors of access and ventilation of products of combustion,

but structural assemblies can be fire-tested and many common ones have been so tested. The usual test of a column, for example, is to determine how long it will stand up in a fire and support the load for which it is designed.

A serious fault in many building codes is that they translate the laboratory test results on structural assemblies into code requirements directly. This is bad engineering. The variation of quality of parts of an assembly or slight changes in the position of components can change the actual resistance very widely.

The Committee on Building Construction of the National Fire Protection Association has considered it realistic to classify the fire resistance of building types in only four categories of approximately zero, one, two and three hours resistance. The resistance of floors and columns principally define the term used to identify the over-all type.

This graduation is about as close as engineering principles of precision warrant under usual building conditions. Assemblies with two-hour fire resistance are the minimum to which the term "fire-resistive" is applied.

Steel-Frame Industrial Buildings

As an example of how the factors enumerated go together in design and use of buildings, consider the industrial building of the unprotected steel-frame type. It can stand, at the most, fire loadings of only about 40,000 British Thermal Units per square foot. It can be of unlimited area only if two conditions are met. One of these is that combustible materials in the building are such as to keep the fire loading low and be so arranged that they do not form a continuous chain of combustible material from one part of the building to another. The other is that the products of combustion may be vented directly through the roof as otherwise they would mushroom and fill the building. A technique used to do this is to break the roof area up into compartments each of which can be vented through monitors or other roof openings. These factors must be considered even where sprinkler protection is provided.

The principle of vents in roofs to release smoke, heat and fire is an old one. The National Fire Protection Association's Committee on Fibre Storage has developed a standard which calls for a 16-square-foot roof hatch for each 2,500 square feet of floor area in warehouses for cotton and other baled fibres. This is a ratio of approximately one to 156. The Building Exits Code, prepared by the Committee on Safety to Life of the National Fire Protection Association, reflects a common provision of building codes by specifying one square foot of roof vent for each 10 square feet of stage and for each 30 square feet of auditorium floor area. Such vents must operate automatically by a fusible link or other heat-actuator and must be operable manually from the floor.

The Committee on Piers and Wharves has presented a revised standard to the National Fire Protection Association having the requirement that these structures must be completely sprinklered and that they must have roof ventilating facilities such as skylights, totaling 100 square feet each, in heat-banking areas formed by ceiling curtain boards located transversely, and not over 100 feet apart along the length of the pier. This requirement would provide a vent ratio of the order of one to 150 in a good many applications, but note that it calls for a vent at intervals of not less than 100 feet. This is recognition of an important principle in venting. One roof vent of 16 square feet may be about right for a floor area 50 feet by 50 feet, but it does not follow that one roof opening five times as large can take care of five times the floor area. (*See July, 1956, "Quarterly," page 58, "Roof Vents for Fire and Smoke."*)

Storage Buildings

In storage buildings the factor of access is so important that a good storage building is a narrow one to provide access at both sides. Storage should always be sprinklered because of high values per square foot. The building should be good enough to protect the storage from the weather and from pilferage. Otherwise, the building type is not very important. Whatever type is chosen, its fire loading would usually exceed its fire resistance.

With fire-resistive construction, storage can be compartmented, but the factor of access is difficult and special provisions for venting products of combustion must be provided.

Underground Buildings

In the case of a building underground, matters of access and the venting of products of combustion assume very great importance. For such buildings, the matter of access has not always been considered. One storage facility for bank records which has been built in a cave has only one way in and out. In one bomb shelter, built for employees of an industrial plant, there are two ways in and out, but these were provided with safe exit in mind.

There is an increasing number of such underground structures and some are likely to be built for factory and warehouse occupancy. I do not think it has occurred to any of the designers yet that means must be provided for the venting of the products of combustion. I hope we will not have to wait for a disaster to illustrate the need of this feature in building design. It does not take much imagination to see what will happen. An underground building is simply a hole, in a hill, for example, with one way in and out. Whatever burns will give off smoke and gases. Small amounts of such products can be taken care of by an air ventilating system, but any substantial amount of smoke and hot gases will simply mushroom in the underground space. At the entrances a blast of hot, poisonous gases will bar any entrance for fire fighting or rescue.

In underground buildings, the fire loadings must be kept low. The designer who fails to provide sprinkler protection for the entire underground area, including all concealed spaces, would not be doing his job. Underground buildings are unlike normal buildings because there are no windows and because access to the outside is limited. The building design must provide for a system of ventilating flues to channel the gases, flames and heat of a fire safely outside. It would seldom be sufficient to build these vent systems as mere air ventilating systems. Some underground buildings will be warehouses. In buildings of such high fire loads, the fire vents would have to be designed like chimneys.

The Los Angeles County Fire Department makes use of animated figures of Sparky and Smokey, especially for children's fire prevention programs. Here Chief Klinger captures the attention of a group of youngsters as Sparky moves, talks and sings. The figures are manufactured by the R. J. Mealey Corporation, 51 States Street, San Francisco, California.

Fire Prevention Is Good Public Relations!

From an address by Chief K. E. Klinger, Los Angeles County, California, Fire Department during the 60th Annual Conference of the National Fire Protection Association, Boston, Massachusetts, June 7, 1956.

THE science of good public relations is vital to successful big business. It is fostered with all the imagination and ingenuity that can be contrived. What is true of a large, successful, business organization has proved true for all lines of endeavor, including public service organizations, and, to be specific, fire departments.

There is no difficulty about selling the idea of fire control to the public — every one believes in putting out a fire — but to get the full cooperation of citizens in the matter of fire prevention requires the use of all resources of education and persuasion available. We have something intangible to sell, to be sure, but it is something more important than just products and things — we must save more lives and cut down fire losses. We need to use more psychology in educating the public that *fire prevention is our most important project* (with apologies to General Electric).

The Los Angeles County Fire Department has always been receptive to ideas and suggestions from any individual or organization. I want to explain the fire prevention problem that we have in the territory under the jurisdiction of our Department.

Most people are inclined to think that an unincorporated portion of a County is usually rural; in a great many instances this is true. It is not the case in Los Angeles County.

We have the unique problem of protecting an extremely fast-growing urbanized area, as well as the most highly-valued watershed in the world, in a semi-arid climate where the protection of watershed is of prime importance if we are to protect the source of our water supply. The vast influx of people has made necessary the establishment of large tracts of homes in and adjacent to the mountainous and brush-covered sections of our County. Many people living in these homes do not have a clear understanding of the watershed fire problem. Therefore, considerable fire prevention education is necessary to acquaint them with the extreme fire hazards which exist the year round in these areas.

In addition to the urban and watershed areas, the department protects large oil fields and refineries, highly concentrated manufacturing districts, the well-known Sunset Strip night club area, as well as three cities which alone have a population of 125,000 people. There are 1,300,000 people in the urbanized unincorporated areas, and over five and one-half million people who yearly use the recreational facilities in the mountainous areas of the County, which are also protected by our Department.

There are 375 square miles of territory in the Fire Protection Districts and over 1700 square miles in the watershed area. As an example of the distances it is sometimes necessary to move men and equipment, it is 100 miles from our Fire Station 56 in the south end of the County to Fire Station 33 in Lancaster, at the north end. The Department also maintains a station at Catalina Island, 26 miles from the mainland.

The fire prevention problem in Los Angeles County is not only unique, but vast.

The mainstay of our public relations program is the daily contact made by our personnel with the public. Last year, in my department, we made approximately 16,000 fire or emergency responses; yet our Fire Prevention Bureau alone made several hundred thousand personal contacts. If you add these to the number of contacts made by each member of the Department, both on and off duty, I think you will agree that the number of public contacts made on fires is small when compared with the other.

To the general public, each member of the organization is Mr. Fire Department, whether he is from a station house, the Fire Prevention Bureau, or a member of the civilian personnel. What Mr. Fire Department says, how he says it, and his personal appearance and actions, all reflect on the department.

We carry on a constant training program for all personnel, concentrating not only on fire suppression, but also on the fact that good fire prevention is good public relations.

We are engaged at present in expanding our home fire prevention inspection program. Chief Jay Stevens and several members of the International Association of Fire Chiefs are attending Governors' Councils on Fire Prevention throughout the United States. These Councils encourage a greater use of home fire prevention inspections in

an attempt to alleviate some of the hazards which exist in our homes today, and in an attempt to cut down on the appalling loss of life and property due to fire. The cooperation they are receiving throughout the country is extremely gratifying.

In the home fire prevention program in Los Angeles County, we realized that first of all we had to sell our own personnel on the idea. Second, we had to train them in public relations — to thoroughly know their jobs, to meet situations, and, primarily, to be courteous. In order to do this, we developed a visual education program which has been very beneficial.

After educating our own personnel, we sold the people on the idea that home inspections were not an invasion of their privacy, but that we were trying to help them. We made extensive use of television, radio and the newspapers to get the message across.

We also attempted to take the advice of experts in the field of public relations, such as Mr. Stuart Peabody, Assistant Vice President of the Borden Company, and a good friend of the Fire Service. Mr. Peabody, as you may know, is one of the men responsible for creating and helping to make "Sparky" the nation-wide symbol of home fire prevention.

After reading Mr. Peabody's article, "Modern Promotion for Fire Prevention" in the NFPA *Quarterly* for July, 1954 some of my staff gained inspiration. Captain A. F. McCrary had his wife design a Sparky costume for him. We then had one of the artists at the Goldwyn Studios assist him in creating a workable mask. (See October, 1954, NFPA *Quarterly*.)

Whenever we have an opportunity, especially during Fire Prevention Week, at school programs, parades, or television shorts, we use Captain McCrary with his Sparky costume. At Christmas time, he appears with Santa Claus to emphasize Yuletide fire safety.

In addition, we adopted two animated figures of Sparky, the symbol of Home Fire Prevention, and Smokey, the Forest Fire Preventing Bear. By the use of these "gimmicks" we believe Sparky and Smokey have reached hundreds of thousands of people with their messages of fire safety. Through tape recordings Sparky and Smokey sell our fire prevention commercials.

To supplement our publication program, we constantly use the many fine fire prevention posters and literature which are issued by NFPA and other organizations.

We are extremely fortunate to be one of the nation's centers for the film, radio and television industries. The cooperation we have received from these agencies has been outstanding. I do not mean to imply that it has not been hard work. It has. However, by adapting the simple Golden Rule to our relationships with these people, I believe we have found the secret to a successful public relations program.

About three years ago, we instituted a Junior Fire Department in the fifth and sixth grades of the County schools. This program was adopted from an extremely successful one which had been in operation in the City of Los Angeles for several years. I would like to give credit to retired Fire Chief John H. Alderson, and his staff, for their valuable assistance and advice, and to the present Chief Engineer, Bill Miller, who is continuing that fine cooperation.

WHEN we first started the Junior Fire Department, we realized that we must first sell the teachers, who would in turn help to sell the students. We arranged with the County Superintendent of Schools to participate in the Teacher Institute program to conduct fire prevention education activities for the teachers. Of course we don't teach them to fight fire — only how to prevent it. Teachers now receive credit for attending these Institutes, which we feel has stimulated their interest in fire prevention.

Captain Priest, of our Fire Prevention Bureau, is kept very busy throughout the year giving his "Chemistry of Fire" program at schools, PTA meetings and service clubs. It has been received enthusiastically and has conveyed a valuable fire prevention message.

I'd like to mention two incidents of which I am extremely proud. As far as I'm concerned they reimbursed us for all the money and effort we have put into our Junior Fire Department program.

Young John Rivera is a member of the Junior Fire Department of the Lillian Street School. He was on his newspaper route for the Los Angeles *Mirror* one afternoon when a 5-year-old girl ran screaming out of a trailer park with her clothing aflame. Johnny, remembering the training he had received from Inspector Mullen of the Junior Fire Department detail, grabbed his coat, wrapped it around the girl and rolled her on the ground. She got away once, but Johnny grabbed her again and snuffed out the fire. She was immediately taken to a hospital where examination revealed she had only second-degree burns, but the doctor stated that if it had not been for the quick action on the part of the boy, she never would have survived. Incidentally, Inspector Mullen had told the children only a few days before what to do in this type of an emergency.

Then there was James Nunez, 10 years of age, of the Fifth Grade in Rancho Santa Gertrudes School in Los Nietos. James was at home one day looking after his little 2-month old sister, and his brother, Johnnie, aged 7. Johnnie found some matches and accidentally set the baby's crib afire. When James smelled smoke, he immediately rushed into the room, grabbed his baby sister from the crib, and when she was safe, returned and extinguished the fire in the bed clothing. When questioned about his brave deed, he told his mother he had learned what to do from Captain Hooper, who has charge of our Junior Fire Department detail.

We have not limited our school program to the teachers and the fifth and sixth grade students, but have also gone into the colleges to educate the students.

In cooperation with the United States Forest Service and the State Division of Forestry, we carry on a year-round educational program on forest fire prevention. Our permanent exhibit at the Los Angeles County Fair was seen by over one million people last year. We feature another exhibit each year at the Los Angeles Sportsmen's Show.

I have barely touched on the vast and important field of fire prevention and public relations. I cannot emphasize too strongly that we all must be constantly looking for and using new approaches to reach the public. So let's let "Sparky" spark new fire prevention ideas.

The Antlers Conflagration of 1898

By DR. LESTER L. WILLIAMS

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IN 1898 Colorado Springs had a population of 22,000. Fire protection was provided by a department of 14 paid men, plus three volunteer companies: the Adams, Sinton, and Reed Hose Companies, hold-overs from the days of 1872 to 1894 when the entire department was volunteer. The paid department had been in service over four years, and was well trained and well organized. The chief, E. E. Baty, was on duty as a sergeant in the Second Regiment Engineers, U. S. Volunteers in Hawaii, for the Spanish-American War was just ending. Acting chief was B. B. McReynolds, cool, business-like, and athletic, while Fred Armbruster was acting assistant chief. At the central station in the old city hall, 18–20 S. Nevada, where the Public Utilities Building stands today, was quartered a hose and chemical combination wagon, and a brand-new Seagrave trussed frame city service ladder truck each drawn by two horses. At No. 2 station, located as it is now on San Miguel between Weber and Wahsatch Streets, and at No. 3 station at the southwest corner of Pikes Peak and West Ninth Street (then Adams St.) were quartered combination hose and chemical wagons. Each wagon carried 1,000 feet of 2½-inch hose. The men were given an hour off duty three times per day for meals, and one day off in eight. The department averaged 125 calls per year. Response to fire calls was fast, what with sliding poles, a chain across the horses' stalls that dropped automatically when an alarm came in, horses trained to take their places in front of the apparatus, automatic falling harness, and well trained men. It was claimed that hitching took only 2 seconds, and that at the Central Station they hitched, rolled out of the station, and laid 200 feet of hose in just 30 seconds. The three mentioned volunteer companies each had a hand drawn hose reel, each of which carried 600 feet of hose. So much for the stage-setting.

Early October was not selected for Fire Prevention Week without a reason. It is the week that contains the anniversary of the great Chicago conflagration of 1871. Strictly speaking, conflagrations are fires extending over a considerable area and destroying numbers of buildings. Colorado Springs has had two: one occurred October 7, 1876, and the other is our present subject.

At 2:25 P.M. on October 1, 1898, Box 51, corner of Huerfano, (now Colorado Avenue), and Eaton (later 8th St.) was pulled, and at the same time a telephone alarm came in reporting a fire at the D.&R.G. Freight Station. A fire had started under the south platform of the station. The platform was about four feet high, open underneath, badly battered from much use, and broken by wagons backing into it. Under it was an accumulation of trash and tumbleweeds, ready to flare into flame from the smallest spark. It was pretty well agreed that the fire started from a match or a cigar butt discarded by one of the many hobos who walked past there every day, or from a spark from the D.&R.G. switch engine. On an ordinary day, a fire in the freight depot would have been easily controlled, but this was no ordinary day. Colorado Springs is subject to winds of 25 to 40 miles per hour 81 times per year, while gales of over 40 miles per hour strike this region 9 times per year. October 1, 1898 was a day of gale, with a wind of 47 miles per hour. One old timer recollects that it wasn't just the gusts that hit 47 miles per hour, but the wind was steady at 47 miles per hour. When the firemen from stations 1 and 3 arrived they found the fire spreading rapidly, and within five minutes the entire freight station was engulfed by flames. Due to the wind, that structure burned like a blow-torch, and set fire to a number of freight cars spotted alongside, burning ten of them. Included in the freight cars was a carload of dynamite and one of giant powder.

Part of the explosives shipment was consigned to G. S. Barnes and Sons Hardware, 17 S. Tejon St. Barnes had sponsored the juvenile company of the volunteer fire department. The remainder of the explosives was destined for other communities, and the two freight cars were to have gone to Cripple Creek on the Colorado Midland and the Midland Terminal Railroads at 4:30 P.M., but the fire didn't wait. Hose Company No. 2 was called from the north end, so that all men and equipment of the paid department were at work, and a number of hose lines were playing on the fire, but they did not serve to check the flames. Mr. Bill Crosby of Manitou was coming to Colorado Springs on the

(*Left*) View of the east side of the Antlers Hotel during conflagration. Note empty hose reel of a volunteer company in foreground and furniture removed from hotel and piled in street for removal by wagon to a place of safety.

afternoon D.&R.G. train. When the train arrived at the passenger depot the train crew was informed of the situation, so they uncoupled the coach then took the locomotive and managed to couple on to the car of dynamite and pull it away from the fire, but it was just too hot for them to get the car of powder. It was obvious to all who watched the fire extend from the station to the freight car containing the powder that an explosion was inevitable.

Mr. Crosby recalls that the train crew with the locomotive and the car of dynamite backed down south several hundred yards to the coal chute where they awaited the explosion.

Faced with a gale and a fire that was spreading despite the best efforts of its fire department, Colorado Springs called for help. The three volunteer companies, the Sinton, the Adams, and the Reed responded. Telephone calls were placed to Colorado City, 2 miles west, and to Manitou, 7 miles west. Colorado City had been fighting a fire but it was under control, so their horse drawn hose wagon was immediately dispatched to Colorado Springs with 15 men under Chief Ed Minium. Manitou sent one of its two hose reels, that of the W. A. Bell Hose, Hook & Ladder Company, plus some extra hose and about 25 men, under Foreman Sid Davis. Bess and Gerry, a team hired from the livery stable, pulled a light wagon on which 8 or 10 men rode, and the hose reel was pulled behind the wagon. The run took only about 20 minutes and they arrived about 3 o'clock.

AS THE explosion was inevitable, firemen were withdrawn a short distance to avoid casualties. A few minutes before 3:00 P.M., just half an hour after the initial alarm, the powder blew, throwing burning brands and boards high into the air where they were carried northeast by the wind. Flaming timbers and pieces of powder kegs fell among a group of about twenty small frame houses near the Denver and Gulf yards, and on the sheds of the Crissey-Fowler Lumber Company, 109 W. Huerfano. Of course, in that wind, I am sure many sparks and embers were always in the air and carried long distances; the explosion merely increased the size and number of the flying brands.

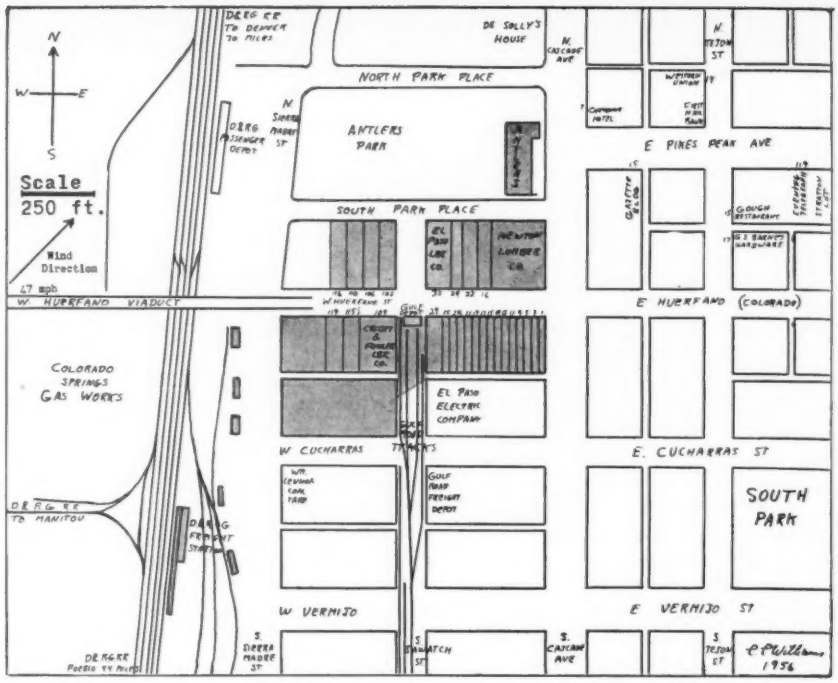
(Right) View southwest of the ruined Antlers Hotel, following October 1 fire. Photo probably was taken on the day following the fire, for large crowds came to inspect ruins. Walls were pulled down a short time later.

The area immediately northeast of the freight station was occupied by three lumber yards: Crissey-Fowler at 109 W. Huerfano, the El Paso Lumber Company at 32 W. Huerfano, and Newton's at the northwest corner of Huerfano and Cascade. In addition there were many small buildings, some log cabins, and some tar paper shacks, mostly with shingle or tar paper roofs. Resistance to the spread of fire was nil. The occupants of the buildings included 7 blacksmiths, 2 grain and feed stores, 2 paint shops, 2 lodging houses, 3 restaurants, 3 clothiers, 2 candy stores, a pawn shop, an assay office, and various others. Almost immediately after the explosion the yards of the Crissey-Fowler Lumber Co. were ablaze. Next the Colorado and Southern Passenger Depot on Sahwatch, just south of Huerfano, caught fire and burned, and coach No. 61 burned too. After the coach started to burn it was pulled away from the station, then it was found to endanger surrounding property so it was pushed back to the main body of the fire and allowed to burn.

At about this point the fire moved in two directions. It continued to spread eastward on the south side of Huerfano Street, burning one structure after another. The other front crossed Huerfano opposite the Crissey-Fowler Lumber Yards and moved east on the north side of the street, quickly involving the El Paso Lumber Co., intervening structures, and the Newton Lumber Co. on the corner. A short distance north of Newton's, about 75 feet across South Park Place (a little north of the present Antlers Place) was the south end of the Antlers Hotel, one of the show places of Colorado Springs, completed 17 years earlier at a cost of $180,000. The tremendous heat generated by the burning pine of the lumber yard fanned by a strong wind, constituted an extreme threat to the hotel. Since Newton's was doomed to destruction, most available hose lines were concentrated on the south end of the Antlers and on the lumber yard just across South Park Place. In addition to the hotel, the buildings on the east side of Cascade, built since the conflagration of 1876, were threatened.

When a fire advances as fast as this one did, a fire department must retreat, and often leave hose lines behind, for a fire hose full of water is heavy and unwieldy and difficult to move. After the fire was over, it was calculated that at least 1,000 feet of hose had been destroyed. The lost hose, plus apparatus bare of hose due to lines already laid, meant delay for the fire laddies in setting up new lines of defense. Sometimes lines have to be abandoned so fast that there is no time to shut down the fire hydrant, and such flow bleeds the mains of needed water and reduces pressure. All these factors may have played a part at this stage of the fire. It is known that some lines were brought into play to wet down the buildings on the east side of Cascade to protect them. Comment was made during and after the fire about the low water pressure, and the need for pumping equipment. Bill Lucas tells that during the fire his father drove through the north part of town on a motorcycle requesting householders to turn off all water faucets so as to lessen the water flow and improve water pressure at the fire.

About 3:30 P.M., as the heat from the lumber yards attacked the south end of the Antlers, all guests were evacuated from the hotel with as much luggage possible, then all furniture was carried out by volun-



(*Right*) Dr. Williams sketch of the fire area. Shaded portions indicates buildings involved in the conflagration. Arrow at left indicates direction of wind which averaged about 47 miles per hour. D. & R.G. railroad depot where fire started and explosion occurred is at lower left.

teers and stacked in the park west of the hotel. The hotel books were hastily thrown into the large safe which was closed and locked, then pushed out of doors and tumbled down the embankment into the park, where it was later buried in ashes. Meanwhile, courageous volunteers, hotel employees, and bellboys organized a bucket brigade and poured buckets of water out the upstairs windows in an attempt to cool the south end of the hotel building. A number of colored porters were on the roof, and buckets of water were passed up to them to be poured over the smoking south end of the hotel. Others tried to wet down the hotel with garden hoses. Several times exposed woodwork blazed but was extinguished. At this point poor water pressure was very evident.

The late Mr. Melvin Sinton told a very interesting account of his activities that afternoon. At the time, he was in the county commissioners office. From the explosion and the great cloud of black smoke he sensed that a disaster had occurred, and that the services of the Sinton Hose Company would be needed. He had not been a member of the Sinton Hose Company because of his slender build, but actually was more interested and a harder worker than most of the bona fide members. He rode his bicycle to the Sinton Dairy where he picked up a light spring wagon and a horse. At the hose house he had two volunteers sit on the rear end of the wagon and hold the tongue of the Sinton Hose Reel, and thus pull it to the fire. This may sound simple, but those hose reels were heavy, and they carried 600 feet of hose weighing 120 pounds per hundred feet. The striker for the gong rang once automatically with each revolution of the wheel. Going to the fire the horse was excited by each stroke of the gong and lunged forward to increase his pace. This turned the wheels a little faster and brought the next stroke of the gong a little sooner. This apparent continuous acceleration all the way to the fire put quite a strain on the arms of the men holding the heavy hose reel. When the Antlers was reached, they felt their arms had been stretched considerably. On arrival at the fire Mr. Sinton and his men saw the peril to the Antlers. To meet this threat they tried to carry a line of 2½-in. hose up the vertical steel ladder on the west side of the hotel, but they were unable to get past the cornice on to the roof. Mr. Sinton regretted this failure, and to it he attributed the loss of the hotel.

Despite these frantic efforts, the end of the hotel gradually grew hotter, the paint blistered, and finally the entire south side of the building burst into flames at once. The time was 4:07 P.M. Many spectators were watching the fire and immediately the cry went up: "The Antlers is on fire!" Far to the north other anxious watchers heard the news and were struck with consternation, for the Antlers added new fuel to the fire threatening still further extension of the conflagration north and east with destruction of the town. Many merchants acted on their fears, hiring teams at exorbitant prices (often $10 to $25 per load) to transport their account books and most valuable stock to a place of safety. Goods were piled in North Park (now called Acacia Park), in South Park, now occupied by the Court House, and in the Stratton lot where the Mining Exchange Building now stands.

Some merchants hauled their wares as far as Austin Bluffs, for they feared the entire town would burn. Mr. H. S. Poley, a pioneer western photographer, loaded his prized back-drops into a wagon and hauled them north on Tejon Street. Falling sparks burned holes in them rendering them useless. The Western Union Telegraph Company at 14 N. Tejon set some kind of a record. Fearing that the entire block would go, it closed its office at 4:00 P.M. and moved out. An hour later it moved back, and by 5:30 P.M. was ready to send messages again.

The Bell Hose Company from Manitou hauled its reel to the northeast corner of Cascade and Pikes Peak, and took a line to the roof of the Cheyenne Hotel. They did excellent work there, and managed to keep that building from burning. Falling sparks did set fire to the roof at 7 N. Cascade, causing about $800 fire damage. The water used to extinguish this extension caused about $1,300 damage, but the fire was stopped in its tracks. Just north of the Antlers Hotel, on the block now occupied by the Marksheffel-Adams Motor Co., was the large house of Dr. Solly. It was feared that the heat from the burning Antlers would ignite it next. Blankets which had been removed from the hotel were hung over the south side of this house and kept wet with water from a hose line. This heroic measure kept the fire from spreading further north. The intense heat from the burning lumber yards and the Antlers cracked windows on the east side of Cascade between Huerfano and Pikes Peak Avenues and threatened to ignite these buildings. They were wet down from hose lines and prevented from burning.

As I mentioned earlier, during a fire of this magnitude many events occur simultaneously, so now we must go back an hour to pick up another of the important happenings of that afternoon. About 3:00 P.M., when help was requested, M. T. Hale, the city treasurer, sent the following telegrams to the mayors of Denver and Pueblo: "Please send help immediately. Town burning up." On receipt of this telegram, Mayor McMurray of Denver notified the fire and police board, and Fire Chief Roberts, who ordered engine companies 1 and 2 with their hose wagons and full crews to proceed at once to the Rio Grande Depot at 11th and Wynkoop. There a special train was made up, and the apparatus was loaded into coal cars with high sides to avoid the delay of blocking the wheels. For the benefit of you rail fans, the locomotive was a ten wheeler, the 526, and was one of the largest of the D.&R.G. engines at that time. The 15 firemen assigned to the two companies rode in a coach, and there were 4 extra firemen, 4 detectives, 2 members of the fire and police board, newspaper reporters, 2 Western Union linemen, and 6 operators to help handle the flood of telegrams. Assistant Chief Terry Owens was in charge, and he must have been pretty sharp, for despite the excitement of the hour, he remembered that the threads on the fire hose in Denver and Colorado Springs did not match, so he arranged to pick up 2400 feet of extra hose from the fire department shops before he left, and as many Cooper jackets as he could lay hands on. A Cooper jacket is intended to clamp around a short leak in fire hose, but it can be used to join two sections of hose where the threads don't match, or are worn or burred. That trick is taught almost universally at fire colleges today, but in 1898 it must have been a revolutionary procedure. Six years later, at the Baltimore conflagration, out of town companies came from as far as New York, Philadelphia, Atlantic City, Washington, and Harrisburg, but since their hose threads did not match, the foreign steamers were restricted to drafting from ponds and rivers, and could deliver water only as far as their own hose would reach. No mention was made of the use of Cooper jackets there, demonstrating that although this is the wild west, it need not necessarily take a back seat to the east in ingenuity. The companies arrived at the station at 4:30, the special was loaded and left Denver at 5:00 P.M. Accounts differ, but the consensus of opinion is that the 70-mile run took 112 minutes, in contrast to the regular time of 145 minutes, so that the special arrived in Colorado Springs at 6:52 P.M. Considering the crooked roadbed of those days, that was fast time.

SIMILAR events took place when Pueblo received Colorado Springs' plea for help. Mayor Orman directed Fire Chief Sam Herd to send all apparatus that could be spared, and that worthy complied by sending Pueblo's steamer, and hose wagons 2 and 3 with 12 men, and Chief Herd himself in charge. Six horses were brought in a stock car on the rear of the train. Mayor Orman, for whom a company of Pueblo's earlier volunteer fire department had been named, came along with several other city officials. Loading of the special train in Pueblo started at 4:15 P.M., and was done with celerity. The wheels of the apparatus were blocked, then further lashings were applied after the train started moving at 4:40 P.M. Running time for the special was a record slightly under an hour for the 44-mile run and the Pueblo Department arrived at 5:30 P.M. Chief Herd immediately placed his steamer at the fire hydrant on Tejon Street midway between Huerfano and Pikes Peak, and ran two hose lines west to the Antlers to subdue the fire there and to stop embers from flying. When the hotel collapsed, one line was played on the ruins, the other on the northeast corner of the lumberyard.

I would call your attention to the 6 horses, 2 for each piece of equipment. Pueblo's first steamer was a small one, probably about 500 gallons per minute capacity, which would correspond to the two lines of hose Pueblo laid out at the fire. Later steamers were heavier, requiring the familiar and famous 3-horse hitch by which most steamers are remembered.

When the train carrying the Denver firemen was five miles south of Denver, smoke was seen to the south causing much excitement, but this probably came from a forest fire near Palmer Lake. Just south of Palmer Lake the firemen donned their protective clothing and fires were kindled in the steamers. Denver had telegraphed ahead for horses to be provided, and these were waiting when the special reached the Colorado Springs station at 6:52 P.M. Immediately upon arrival, Chief Owens went on a tour of reconnaisance while the equipment was being unloaded. He was driven around the burning area to determine where to locate his men and the steamers. By that time the wind had died down from 50 mph to 10 mph, the fire had lost all its aggressiveness and had not spread north or east of the gutted Antlers. There was always the possibility that the wind might rise again so it was important to wet down the ruins and stop sparks and embers from flying. When Owens returned to the station, he ordered one steamer driven to the bank block at the corner of Pikes Peak and Tejon, there to hook up and pump through hose lines on the north end of the two burning lumber yards, just south of the ruins of the Antlers.

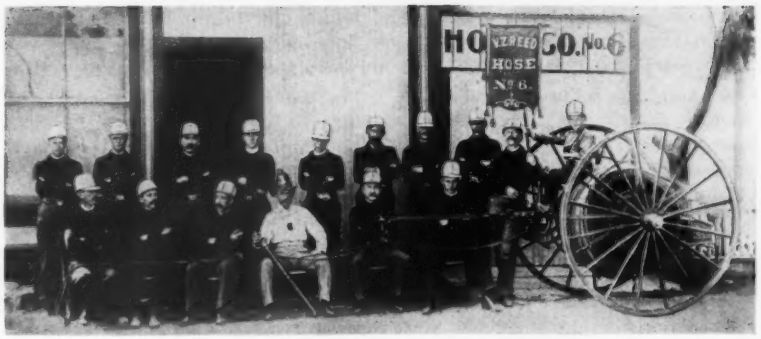
The other steamer was stationed near the depot, perhaps at the plug at the corner of Sierra Madre and North Park Place. From it, two more lines were run to the north side of the lumber yards. When all 4 lines were in operation, Owens sent his men into the midst of the piles of lumber to apply water directly to the hot spots.

There is some disagreement as to who directed the rest of the fight. Normally a fire chief is in charge of any fire that may occur on his home grounds. In a statement to the newspaper several days later, Chief McReynolds of Colorado Springs stated that when the Denver and Pueblo Fire Departments arrived their chiefs reported to him and he put them to work where he felt they could do the most good. He was very happy to see them arrive to help. The *Rocky Mountain News* indicates that when the Denver Fire Department arrived, they found Colorado Springs exhausted by their 4½ hour battle against overwhelming odds, and that they were only too glad to relax. Accordingly, Chief Owens took charge of the remainder of the fight and gave the exhausted Colorado Springs firemen less strenuous work to do.

As generally occurs in any conflagration, there was discussion of the advisability of blowing up some buildings with dynamite. This is often done with the idea of providing a fire break, but usually it is unsuccessful and merely makes the blasted buildings easier prey for fire. Fortunately it was not tried here.

Cripple Creek heard of Colorado Springs' disaster and stood by to help. A special train was made up on the Midland Terminal and loading had begun, but was stopped on the arrival of the telegram stating that the fire was under control.

During the fire, the stiff gale wafted sparks, embers, and sizeable burning boards for considerable distances through the air. Wherever these came to rest spot fires threatened. Probably there were at least 200 small roof fires, but most were quickly put out by householders using garden hose or buckets of water. A brand from the big blaze fell on the roof of the residence of Alfred Hale, 222 N. Tejon, and started a fire. A neighbor attacked the fire with a garden hose, and word was sent to Chief McReynolds



V. Z. Reed Hose Company No. 6 was part of the volunteer fire department and continued in service even after the paid fire department was started in 1894. The Reed Library is still in existence and the Reed Company still meets once a month as a social and benevolent organization.

at the Antlers, who sent J. E. Brandbery who had been holding the team of No. 1 hose wagon. Another brand fell between two barns in the rear and ignited some rubbish there. Both fires were quickly extinguished, and the loss was about $100. One spark flew as far as just south of Austin Bluffs, 3 miles northeast, where it started a small grass fire. About 4:00 P.M., the residence of Mrs. E. V. Smith, 213 N. Weber, caught fire from flying embers. Neighbors saw the embers fall and immediately went to work with a garden hose, but the fire spread and leveled the house. Some furniture was removed and saved. The loss was about $3,000. The college campus, almost a mile north of the fire, was threatened by the possible spread of the fire to the north, and certainly flying brands constituted a real hazard. Word was sent to the college officials that it would be wise to protect the roof of each building, so watchers were stationed on each roof with a line of hose. The college football team members helped to protect the college buildings or grapple with the blaze downtown. A number of them did excellent work at Dr. Solly's house.

Throughout the night all the firemen stood by with watch lines, which they used to douse any spot fires which flared up. The wind rose again at 10:00 P.M., embers and sparks were carried up to 100 yards, and there was threat of a rekindle. By midnight the ruins of the Antlers were under control. Broken gas lines in the hotel ruins burned all night, until the lines could be shut off. At the corner of Pikes Peak and Tejon the Denver steamer pumped all night.

Mayor Irvine was up all night seeing that the visiting firemen were properly cared for. The YMCA dispensed 400 sandwiches, lemonade, and over 40 gallons of coffee to the weary fire fighters. In the morning the Denver and Pueblo firemen were served breakfast at the Gough Restaurant at 13 S. Tejon, then their apparatus was reloaded, and after receiving three rousing cheers, they returned home. Pueblo left at 9:30 A.M., and the Denver contingent departed at 10:20 A.M.

The city printers had a busy day of it. Many years later one of the editors of the *Evening Telegraph*, Mr. H. S. Rogers, recalled the day. When the fire alarm came in, a gong rang in the city room at 119 E. Pikes Peak and a young reporter was sent to the fire. In a few minutes he telephoned in an account of the blaze at the Rio Grande Freight Station and the impending explosion. Editor Rogers rode his bicycle to the top of the viaduct, arriving shortly after the explosion, and looked down on the wrecked depot. He recalled the many lines of hose and the busy firemen, but in the face of the wind their efforts seemed puny. When he returned to the plant he found everything shut down because there was no electric power, so no extra could be put out. *Gazette* employees and others stood on the roof of the Gazette Building (now the old Out West Building, 15 E. Pikes Peak) extinguishing every spark that fell. 150 feet of small hose from the Gazette Building were used to extinguish several fires on the roof, and also one in a small building back of the Gazette Building, the Wooley and Van Vacheten Barn, and a Huerfano Street lodging house. Had

these efforts failed, and fire gained a foothold east of Cascade, destruction would have been infinitely greater.

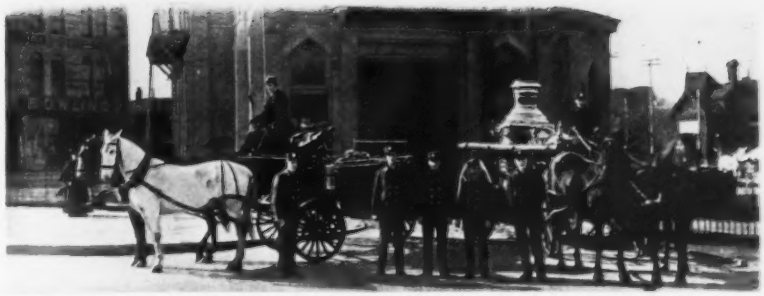
During, and immediately after the fire, there were many wild and unfounded rumors that the blaze was the work of arsonists. This was probably a normal reaction to a fire of such magnitude, an attempt to place the blame for the conflagration. A suspected fire-bug was arrested in the alley behind the Gazette Building during the fire. About dusk, Captain Fair of the police department saw a man in a downtown alley and immediately suspected he might be trying to start another fire. The captain gave chase, but was unable to use his revolver because of the crowds, and after following him for several blocks lost his prey.

To prevent looting, 20 special policemen and 6 mounties were sworn in and stationed at strategic corners in downtown Colorado Springs, where they maintained constant vigil throughout the night.

With the destruction of the power distribution lines from the El Paso Electric Company, the city was in darkness, but service was restored 24 hours later. The poles and trolley wires of the Rapid Transit Co. were down from the viaduct to Cascade, but the company was at work setting new poles the evening of the fire, and the cars were running again by noon the next day.

Sunday a *Rocky Mountain News* reporter wrote that the block on the hill northeast of the depot had been swept clean except for one building of stone. The plant of the El Paso Electric Company at the northeast corner of Cucharras and Sahwatch was unmarked by fire, but all the frame buildings north of it had been destroyed. Safes in the burned buildings were reported to have kept the contents unharmed.

DESPITE the fire's size, the intense work of the fire fighters in the face of the spreading blaze, and the general excitement that prevailed, no one was killed in the fire, nor were injuries very numerous or serious. Several were overcome by smoke, and Officer Elliott was near the car of powder when it exploded. He was shocked but otherwise unhurt. A railroad employee, also near the powder car, was knocked down and suffered mild burns.



Engine Company No. 1 of the Denver Fire Department as it appeared about 1905. Seven years earlier this apparatus responded to the conflagration in Antlers.

The burned out firms showed amazing enterprise in resuming business. The Newton Lumber Company had stock stored at other points in town as well as in Colorado City and opened for business Monday. The El Paso Lumber Company bought out the stock of another company on the D.&R.G. tracks and likewise opened Monday.

By two days after the fire, the city officials were concerned with the attempts of the lumber companies to reopen their old stands. This was within the area where hazardous occupancies were forbidden, prohibited by city ordinance. It was hoped that the lesson of the fire would lead to enforcement of the ordinance and removal of the yards.

As usually happens in any fire of this size, the fire department lost some equipment. Something like 1,000 feet of hose were destroyed, which seems to me like a remarkably small amount of hose to lose in such a fire. A big bay horse belonging to No. 2 hose company got away during the blaze and had not been found 48 hours later. At least one of the hose companies, the Reed, had their hose reel burned in the fire.

The fire department log listed the loss on buildings at $300,000 and contents $150,000, for a total of $450,000 of which $350,000 was covered by insurance. The manager of the Antlers stated that the original building had cost $180,000 and the contents were worth at least $50,000. Another estimate of the hotel's loss was $250,000 on the building and $57,000 on the contents. Newton's loss was set at $60,000; the El Paso Lumber Co., $35,000; the Crissey-Fowler Lumber Co., $22,000; the Pullman Palace Car Co., seven coaches worth $7,000 each, total $49,000; Gulf Road about $19,000; D.&R.G. about $25,000. Numerous other losses were reported, all less than $10,000. The total losses listed in the paper added up to $600,000.

Donations were received from Colorado Springs business men and plaques were struck thanking the fire departments of Colorado City, Manitou, Denver, and Pueblo for their assistance. Mayor Irvine, Alderman McIntyre, and Chief Baty visited these departments in person to present the plaques and also to give $200 to each department, which amounted to about $10 for each fireman who participated.

The embers weren't cool when many sidewalk fire chiefs concluded that if a steamer had been available in Colorado Springs, the Antlers might have been saved. I have uncovered evidence that a steamer had been recommended by those concerned with fire protection as early as 1880, and such recommendation had been made with regularity since 1890. Still none had yet been purchased by 1898. At a council meeting a few days after the fire, the fire committee was authorized to negotiate for a steamer, one was purchased less than a month later, and was delivered by the end of November, 1898. That steamer is in Byron Akers' Ghost Town today, and in almost new condition.

The factors that allowed the Antlers fire to become a conflagration were a fire that started during a period of high wind, blocks of combustible buildings with no fire walls, hazardous occupancies, roofs easily ignited, and lack of pumps and equipment to provide water curtains.

We have gone a long way in providing our fire fighters with tools, what with pumpers, aerial adders, dacron hose, fog nozzles, and oxygen masks. There is just one factor we haven't been able to do a thing about: the winds still blow.

Bring Me Up to Date on "30-L"!

Joe Fire Fighter asks some questions and gets answers from NFPA Flammable Liquids Engineer Miles E. Woodworth.

Question: *I've noticed that there have been a lot of new changes in standards of the National Fire Protection Association. Can you tell me some of the new recommendations pertaining to flammable liquids? And what are the reasons for all the changes?*

Answer: We often get those questions from fire department personnel, particularly just after NFPA standards have been amended. Obviously, it is impossible for NFPA to explain in detail all the lengthy committee discussions which lead to changes in wording of the standards. However, you can be assured that every word and sentence is carefully reviewed by the responsible experts serving as a Committee before any change is made.

Question: *Well, which standard covers flammable liquids recommendations?*

Answer: NFPA No. 30-L — "Suggested Ordinance on Storage, Handling and Use of Flammable Liquids" will give you a lot of information on this subject.

Question: *Is it very important to the fire service?*

Answer: Yes, because many of its recommendations represent the views of the fire services. Through this standard it is the intent of the Committee to provide the greatest amount of safety to fire fighting personnel who have to combat fire in flammable liquids installations. No. 30-L has had a great deal of acceptance by states and municipalities as a basis for laws and ordinances.

Question: *Well, what's the most important change in the new edition of this NFPA standard?*

Answer: From the fire services' viewpoint, the most important change in 30-L is a completely new section on the container storage of flammable liquids (Parts Three and Four of Chapter II). For several years various fire department personnel complained of the lack of guidance given on the small container storage of flammable liquids.

After discussing the problefn with several fire departments which had developed codes restricting the quantities that could be stored in various occupancies, it was decided by the NFPA Committee on Flammable Liquids that quantity limitation was impractical. This decision was reached after a great deal of discussion of the many types of business which by their very nature had to store flammable liquids. This list of occupancies included paint, hardware, typewriter supply, liquor, drug, lumberyards, print shops, warehouses, and others.

Question: *If it's impractical to limit the quantity of flammable liquids in storage and mixing rooms, what has the Committee recommended?*

Answer: With the decision that a gallonage limitation was impractical for all conditions, the Committee decided to establish a guide for the enforcing official, who usually is a fire chief or fire marshal. This guide includes such factors as the degree of life hazard of the occupancy, method and location of storage, degree of automatic fire protection and the access for fire fighting purposes.

Question: *What about drums and other containers of flammable liquids?*

Answer: In the new standard a limitation has been placed on the height of piles of drums or smaller containers. This is based upon laboratory tests on the effectiveness of sprinkler systems to prevent the rupture of the containers when exposed to fire.

Question: *Anything else I should look for in the new 30-L?*

Answer: Yes, the second major change in NFPA No. 30-L is the deletion of the table of distances from underground tanks to buildings with basements or cellars. The experiences of fire departments all over the United States were carefully studied before this change was made. You might study, for example, the important footnote which says:

"Experience has shown that the factors which control leakage from underground tanks and its migration in hazardous quantities to other underground structures, are not the sizes of the tanks or their location within governable distances. Larger tanks, being of thicker material, are, in fact, less likely to leak than are smaller tanks. The migration of flammable liquids through the soil has been found to follow the movement of ground waters, often over considerable distances. The table of allowable distances of underground tanks, based on their size, with respect to other underground structures, has, therefore, been deleted."

As explained in the footnote, experience has proved that the distance factor is relatively unimportant. For example, one fire chief reported to the NFPA that gasoline in a building basement was traced to a leaking tank 1½ miles away.

Question: *Anything else?*

Answer: Yes. Another change was made in 30-L at the request of several fire departments. It concerns the safe disposal of crankcase drainings and includes a definite prohibition of the disposal of flammable liquids into sewers.

Question: *Okay. Suppose I read this NFPA standard thoroughly and then want to make some comments or suggestions. Where do I send them?*

Answer: To me. Just address your letter to Miles E. Woodworth, NFPA Flammable Liquids Engineer, 60 Batterymarch Street, Boston 10, Massachusetts. Anything else?

Joe Fire Fighter: *Nope. Thanks.*

M.E.W.: Okay, any time.

What's New in the Standards on Gases?

John Q. Inspector asks NFPA Gases Engineer Clark F. Jones about the important changes made in the standards pertaining to gases.

Question: *Say, have there been any changes in standards of the National Fire Protection Association which pertain to gases?*

Answer: Yes. The various NFPA committees specifically delegated with the study of problems relating to gases have recognized the need for additional practical requirements in the standards under their jurisdiction. So, they have made a number of new recommendations which should be scrutinized carefully by those charged with fire prevention and all fire department personnel.

Question: *Is there any acceptable system for marking or identifying gas cylinders?*

Answer: In NFPA No. 51, "Standards for the Installation and Operation of Gas Systems for Cutting and Welding," attention is directed to marking of the cylinders. This is in accordance with the American Standard Method of Marking Portable Compressed Gas Cylinders to Identify the Material Contained (ASA Z-48.1 — May 1954). This reference standard has been developed by the Compressed Gas Association as an industry effort to avoid the use of incorrect or unknown types of gas that might be hazardous. We have recently learned of several instances where lack of proper identification of cylinder content was the cause of serious explosion and loss of life. Manufacturers and suppliers of various types of gas should not only adhere strictly to this requirement, but the user of gas cylinders should refuse to accept products not clearly identified. Fire department personnel should make certain that such manufacturers, suppliers and users know about this marking system.

Question: *Have there been any other important changes in standards?*

Answer: Certainly. To assure proper handling and to maintain technically adequate and practical requirements for the continued increased use of LP-Gas, our Committee on Gases has promulgated a number of changes in NFPA Standards Nos. 52, 58 and 59.

Question: *For instance?*

Answer: Well, consider the changes in NFPA Standard No. 52 — "Liquefied Petroleum Gas Piping and Appliance Installations in Buildings." These changes pertain to the venting of appliances and are generally consistent with the provisions as outlined for venting in NFPA Standard No. 54 — "Installation of Gas Piping and Gas Appliances in Buildings."

A number of changes have been authorized in NFPA Standard No. 58 as it pertains to the storage and handling of liquefied petroleum gases. These were made primarily for editorial clarity and to permit the replacement or change of listed parts on a small LP-Gas system with individually listed equipment. They include the prohibition of refilling of single trip or nonrefillable type ICC containers. A new paragraph also has been added primarily to cover the use of partially buried domestic tanks.

NFPA Standard No. 59 applies to the storage and handling of liquefied petroleum gases at utility gas plants. It was revised to describe more fully the requirements as they pertain to fire protection.

Question: *What attention has been given to hazards in hospital operating rooms?*

Answer: Our Committee on Hospital Operating Rooms has developed a number of important changes in NFPA Standard No. 56 — "Safe Practice for Hospital Operating Rooms" in an effort to keep the requirements up to date. One of the primary changes is the requirement of a uniform electrical attachment plug designed to eliminate the confusion involved in noninterchangeable electrical equipment and the danger that occurred when people were confronted with the necessity of altering equipment to fit electrical outlets. In a number of instances in the past, explosion-proof electrical equipment in the hazardous areas of operating rooms was nullified by the use of a short cord and adaptor of the common "five and ten cent store" variety.

Question: *What about the supply systems for nonflammable medical gas?*

Answer: NFPA Standard No. 565 covering nonflammable medical gas systems has been revised to recognize bulk supply systems of the gas or liquid type located on the premises. A number of additional provisions pertaining to bulk supply have been incorporated in this standard as well as several schematic drawings showing a typical installation. Shutoff valves are now permitted in the gas supply main which serves anesthetizing locations. However, these valves must be protected from unauthorized operation and must be permanently identified. The revised standard also provides for the use of flared-type compression fittings on low pressure, visible distribution lines of ½-inch diameter or less.

Question: *Where can I get some information on inerting an enclosure which has a flammable vapor-air, gas-air or dust-air mixture?*

Answer: Read NFPA Standard No. 69, developed by the NFPA Committee on Inerting for Fire and Explosion Prevention.

Question: *Well, where can I get copies of all these standards you have mentioned?*

Answer: You can get pocket editions of these standards from the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts. They are also included in Volume I of the National Fire Codes, available from the same address.

Question: *And if I want to get some more information on gas problems in general, particularly from the fire protection or fire fighting viewpoint?*

Answer: Write to me, Clark F. Jones, NFPA Gases Engineer, care of the NFPA Executive Office.

John Q. Inspector: *Well, thanks. I will.*

CFJ.: You're welcome. Drop in any time.

(Left) Despite the fact that this plane crashed, overturned and burst into flames, twenty-one passengers survived! Note, however, the problems of forcible entry and rescue that confronted responding fire fighters who also had to extinguish fire. *(Photo credits — C.I.R. — Cornell)*

What Are the Chances for Rescue?

When an aircraft smashes into the ground the impact may kill its passengers. But what are the chances of survival of such a crash? What should rescue personnel look for? What will be the most difficult rescue problems?

George H. Tryon, NFPA Assistant Technical Secretary, provides some of the answers with this summary of a recent important study.

STUDIES of four "survivable" aircraft crashes have revealed that 64 percent of the survivors needed help from rescue personnel! Even though the impacts were mild enough for at least a portion of the crew and passengers to live through the smashups, the majority could not walk out alone. They needed help from fire fighting and rescue personnel.

The accidents studied were all different but in each incident almost half or more of the people aboard survived. In one, the aircraft struck the top of an apartment house, lost the right wing, progressed to the ground and broke into several pieces with the rear cabin finally being wrapped around a tree. Fifty-one percent of the occupants survived despite the fact that the initial ground contact was at about 140 miles per hour!

In the second accident, the aircraft was making a landing approach at night and was flown into the ground at a speed of at least 150 miles per hour. It skidded about 1,000 feet in an open field. About 58 percent of the people in this air transport also survived and it was fortunate indeed that fire did not follow since the emergency lighting equipment did not operate and the rear door was jammed.

The third aircraft struck an elevated sign while coming in for a landing and crashed on the airport in flames. Fire extinguishment was very prompt and effective when the airport fire department used 3,700 pounds of carbon dioxide from a Cardox crash truck. Twenty-one survived despite the fact that the aircraft came to rest in an upside down position and the fuselage was so deformed that forcible entry for rescue was made very difficult.

The fourth accident resulted when a plane struck the ground at over 150 miles per hour and stopped within 25 feet. The whole forward end of the cabin was demolished. Some survivors were thrown out of the front end like pellets out of a shotgun!

But the purpose of this article is not to describe what caused these accidents or to report all details of the four incidents — it is rather to report what happened to the survivors and what these facts tell us in anticipating others.

First of all, about 50 percent died. These persons were beyond help — but it was not easy for rescue personnel to pick out the fatalities from those who were alive but in a state of shock or unconsciousness. At first glance, many of the dead showed only minor evidence of external injury.

This, then, is problem No. 1 — to help those first who, by your help, will survive. This selection is not easy and often the time element will not permit pulse taking or any detailed medical analysis. The best rule of thumb is, of course, to treat all trapped victims, not obviously dead, as possible survivors.

On the other side of the ledger, 64 percent of the people involved in these accidents were living but helpless. Their lives depended wholly on the knowledge, the guts and the hearts of their rescuers.

Injury analyses tell you, a fire department member, important facts to remember. Study the following statistics. They may provide helpful information for improving your aircraft rescue training program.

(Continued on page 46)

(Right) Fire fighters and rescue crews might well study this typical interior of a crashed transport aircraft. This plane landed at about 150 mph then skidded 1,000 ft. Emergency lighting system failed and rear door jammed, but 58 percent of the passengers survived!

What to Do about

REACHING THE YOUNGSTERS

Some observations of Robert W. Schuette, Manager, NFPA Public Relations Department, on how fire departments are organizing children's groups for instruction in fire safety.

IN PREPARING campaigns of fire prevention education for children, fire departments should consider what has been achieved in communities throughout the nation. This article will touch upon three aspects of such education.

First is the importance of establishing proper perspective in your efforts to teach fire safety to children; next a brief look at what other groups are doing with their junior fire departments and Sparky fire safety projects; and third, some suggestions to assist you in doing a bigger and better job in this particular area of fire prevention.

You don't have to — in fact, you shouldn't attempt to assume the whole teaching load of fire safety. You should enlist plenty of helpers to work with you in any such program. These include parents, teachers, civic leaders, and a host of others who make up your community.

Your real audience in any fire prevention work should always be the entire community.

What is being accomplished by other fire service organizations?

Chief Thomas Egan of the Arlington, Massachusetts, Fire Department discusses Sparky's Fire Department with 6-year-old Alan Kilgore Johnston.

Consider, for example, the State of Georgia's Junior Fire Marshal program. Currently there is a total of 15,000 youngsters enrolled in this project — the breakdown includes two Junior Fire Marshals appointed in each school and two to four Junior Fire Inspectors in each school room throughout the entire state. These Junior Fire Marshals and Inspectors make out reports for the State Fire Marshal, distribute literature to the school, and actually have responsibilities in the conduct of school fire drills.

The Sparky's Fire Department of Ecorse Township Fire Department, outside of Detroit, Michigan, is instructed in artificial respiration, use of the resuscitator, working a charged hose, ladder work, how to save themselves in home fires.

The children sell Fire Prevention Week stamps to raise funds for picnics and other special events. And, while it hasn't become a tradition yet, last year the town fathers treated the whole group to a trip into Detroit and a big league baseball game.

Each school in Vancouver, Washington, has a complete fire department organization with a chief and officers. The youngsters are trained in first aid, light hose and ladder evolutions and the use of extinguishers. Instead of badges, they are presented with diplomas.

Anchorage, Alaska, was one of the pioneers in showing that much could be done with the Sparky's Fire Department idea. Up there, Chief Burns conducts a weekly fifteen-minute television show during which the official business of the Anchorage Sparky's Fire Department is carried out. Every other week on the show they have an actual Sparky puppet to dramatize the proceedings. And another good feature is that every show is "emceed" by a different fire fighter of the Department each week. This not only gives that man excellent training in one facet of public relations, but it also gives the public a chance to meet the Fire Department personnel.

In conducting a very effective year-round Sparky program for the Anchorage, Alaska, Fire Department, Lt. Stan Larsen has gathered some humorous stories through his instruction of youngsters.

The Department has a female Dalmatian who serves as a live Sparky. Once Larsen was in the process of telling 300 children how bright the dog was.

"Find a fire hazard, Sparky!" he called.

The alert canine responded immediately by relieving herself on the auditorium stage!

Another time Larsen had just finished a thorough lecture to several hundred children. He had explained carefully the hazards of fire with particular emphasis on matches. After he felt sure that he had convinced the group he called out, "Whom do you call when you see a fire?"

"The fire department!" was the answering chorus.

"And what should you never play with?" asked the pleased Larsen.

"Little girls!" answered the voice of a single boy.

There are a number of good child fire safety projects out on the West Coast. The first one of any consequence started about ten years ago. Its sponsor was and still is the Los Angeles Fire Department. The Los Angeles formula has been copied quite widely and right now some of the biggest junior departments of this type are located throughout California.

Among the materials used in the Los Angeles Junior Fire Department are a teachers' manual, a special manual for children, a home check sheet, hazard correction cards, inspection blanks, badges and record-keeping forms.

The Los Angeles County Fire Department also uses this program and has offered to furnish samples of any of these materials to fire de-

partments requesting them. The manuals are available for purchase in quantity from the Los Angeles Fire Department.

On the East Coast there are organizations like the Western Turnpike Fire Prevention Committee just outside of Albany, New York. This is a real fast-growing organization and one of the most enthusiastic of Sparky projects. (See September, 1955, FIREMEN.)

Probably the biggest Sparky operation is in San Antonio, Texas, where the membership totaled 3500 youngsters at last report and this only included 7 out of the many schools in the city.

Another Sparky operation, which is effective and well received among the youngsters, is the Sparky unit sponsored by the Emerald Hose Company No. 3 in Renovo, Pennsylvania. The youngsters in Renovo have their own pumper; they meet twice a month and perform various public services and good deeds. They are Civil Defense messengers, participate in all parades, and were active in last year's Pennsylvania State Fire School.

In Anniston, Alabama, the Ordnance Depot personnel organized their Sparky unit in a very original way. They created a questionnaire which was circulated to the youngsters and was made the basis for membership and obtaining Sparky badges. While the first approach was directly to the youngsters the parents were also considered. When the parents and youngsters became interested the Ordnance Depot personnel told the story to the local Lions Club and showed them how financial support of a going concern would be a very desirable public service. It worked and it ought to work in other places as well.

The Junior Chamber of Commerce in Elmhurst, Illinois, made a demonstration kit on explosion hazards, electrical overloading and how to use extinguishers. Then they trained their Sparky group to give this demonstration before civic groups and other organizations in the area.

Calgary, Alberta, in Canada, has founded one of the biggest and best Sparky projects. It's a fire department operation with no outside sponsor. There are now over 2,000 members in the Calgary Sparky's Fire Department.

In Talladega, Alabama, the insurance agents support the fire department's Sparky project. The fire department permits the agents to stamp their names on a number of membership kits proportionate to the amount of money they each donated.

In Virginia, Captain Duane McSmith of the Langley Field Fire Department has converted a Crosley automobile to a Sparky Fire Department pumper.

In Piedmont, California, for a number of years Fire Chief Sandy formed and ran his own junior organization and paid members 5 cents a week out of his own pocket just to keep them actively interested. He has since merged the Sparky idea into his department and added a couple of features. Members of that Sparky group temporarily lose their badges and are suspended if any teacher or parent reports nonconformance with good fire safety standards.

In Port Angeles, Washington, the entire Sparky program is directed at second graders only. Each year new second grade pupils are given instructions throughout the school year and finally become members with much ceremony. They are transported to the main fire station class by class in pumpers where they hear the special series of lectures.

Except for the Los Angeles junior fire department, most of these programs are directed to the younger children. As a matter of fact, we recommend that the Sparky program be aimed principally at children in the first three grades and also to pre-schoolers. We try to keep these age groups in mind as we prepare additional Sparky materials.

There are many sources that you can and should contact for help in any child fire safety program you sponsor. Not only is the NFPA ready to help but there is also the National Commission of Safety Education which is a part of the National Education Association in Washington, D. C., and the Liberty Mutual Fire Insurance Company in Boston which has created some extremely interesting and useful materials.

Here's some advice from the producer of one of today's most popular children's television programs, the Captain Kangaroo show. In a recent *Printer's Ink* article he listed the following "do's" and "don'ts." They are good suggestions for any fire department that tries to focus the attention of children on fire prevention.

The San Joaquin Association of Insurance Agents donated this animated figure of Sparky for use by the Stockton, California, Fire Department in its children's fire prevention program.

Do accept the fact that children are imitators. Be sure whatever you offer them to imitate is healthy: physically, mentally, and morally.

Do bear in mind that your message is going to be seen and heard by young humans of potentially great taste. They are capable of thinking up — you don't have to talk down.

Do realize children are easily frightened by violence, villainry, too-sudden movement and noise, distortion of human features, enlarged insects, etc.

Do give them entertainment! You want to be invited back to their homes, so make them want you back by selling them pleasantly.

Don't violate any of the basic principles of good behavior, even if your commercial is sugar-coated and "kind of cute." Children are too literal to appreciate the sugar-coating; the "kind of cute" idea rarely impresses a parent.

Don't suggest behavior that will present problems for parents. Standing on ladders, experimental "flying," and examining washing machines are the stuff of which home accidents are made.

Don't exert group pressure directly on the child, or through the child on the parent, as a vehicle for selling merchandise or ideas.

Don't be misled by the false assumption that loud noise and souped-up activity are the best ways of capturing your audience.

Sparky Items

For the Kids . . . .
For your Fund Raising Campaigns . . . .
For Fire Prevention all year 'round.

OFFICIAL SPARKY PRODUCTS

— VINYL RAINWEAR —

"Fire" Coat (2–16)	$4.95	"Fire" Hat	$1.95
"Fire" Slax (S-M-L)	2.95	Bandanna	.75

All in Sparky safety yellow heavy duty vinyl. There is no finer vinyl rainwear made. All electronically sealed. No stitching to give way. Each garment unconditionally guaranteed.

$2.95

— SPARKY SPRUCE KIT —

Sparky likes neatness. Sparky members can keep neat with this Spit & Polish Spruce Kit. Contains brush, dauber, cloth, brown stain polish, black stain polish, and the kit is all plastic with transparent top and zipper closure.

— SPARKY EMBLEMS —

Separate emblems available. Cloth emblems easily applied with warm iron to sweaters, shirts, jackets, etc. Cloth emblem electronically sealed to any rainwear item on request with order — installation free of charge. (Plastic included standard — no charge.)

Plastic — Blue & white	$ .15
Cloth — Black & white flocked	.25
Cloth — Black & white reflective	.35

Quantity prices on request

REMEMBER — XMAS IS JUST AROUND THE CORNER!

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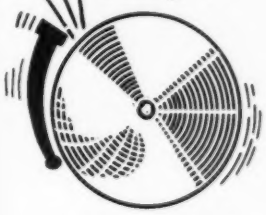
Hingham Harbor Massachusetts

Hey, Chief!



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OFFICIAL SPARKY CAPS

OFFICIAL SPARKY COLORING BOOKS

SEND COUPON FOR YOUR FREE OFFICIAL SPARKY CALENDARS

THE OSBORNE COMPANY, NORWOOD PARK, CINCINNATI 12, OHIO

Please send my Free SPARKY calendars, one for my house and a large calendar for the Firehouse. I want to see the Sparky program you sell local advertisers for distribution by the Fire Department in the interest of Fire Safety.

CHIEF_____

TOWN_____

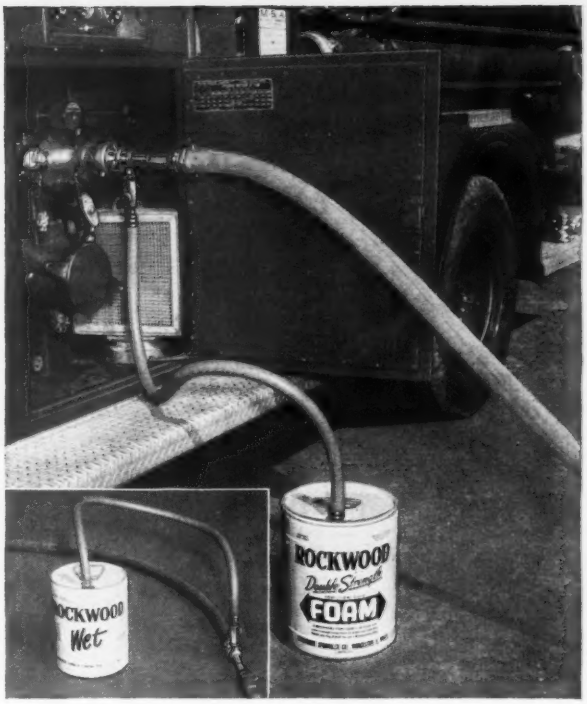
COUNTY_____ STATE_____

WRITE for information about our OFFICIAL SPARKY ASH TRAYS and SPARKY COLORING BOOKS!

For complete information on how Sparky's Fire Department can help in your community, write today to

NATIONAL FIRE PROTECTION ASSOCIATION
60 Batterymarch St., Boston 10, Mass.

ROCKWOOD
built-in proportioning systems for municipal fire trucks



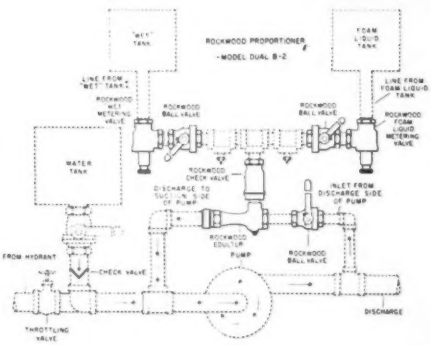
Rockwood's long, practical experience and constant research assures you the safest, most economical means of fighting all types of fires. These pages illustrate a few of Rockwood's family of products that are playing a vital part in fire fighting programs throughout America.

Rockwood's new Double Strength FOAM and Rockwood WET offer you many advantages

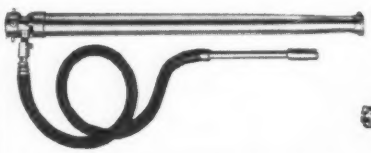
Double Strength FOAM has double foam-making capacity, cutting in half the transportation cost and storage space. It is faster spreading and flows freely — even at subzero temperatures. An outstanding FOAM liquid to go with Rockwood's advanced type of FogFOAM and FOAM Nozzle for quickly putting out fires in gasoline and other similar flammable liquids. Available in 5 gallon cans or 50 gallon drums.

Rockwood WET increases the spread and penetration of water into deep seated fires involving ordinary combustibles such as wood, paper, cloth, etc. It greatly reduces the water needed to extinguish such fires. Available in 50 gallon drums, 5 gallon and 1 gallon cans.

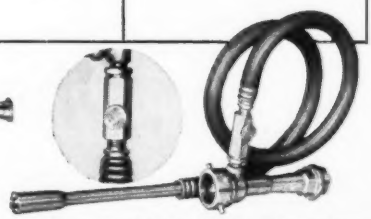
Regular FOAM and All Purpose FOAM are also available.



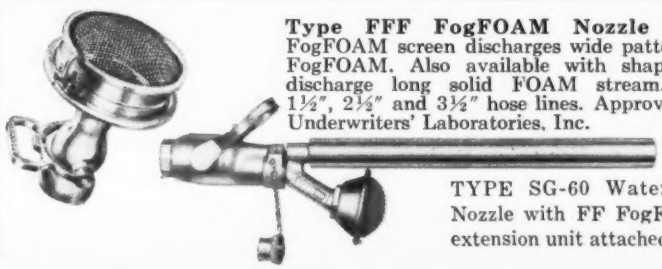
Proportioning System. Model B-2, around-the-pump proportioner. Used when pressure is maintained by pump. Custom-engineered systems are also available.



The F-501 Nozzle developed for use with 1½" hose to provide an economical means of applying a solid stream of FOAM on flammable liquid fires.



The Variable FW Metering-Check Valve with FW Eductor incorporates both the Metering Valve and Ball Check Valve in one unit and meters material into the hose line in any proportion from 1% through 6%.



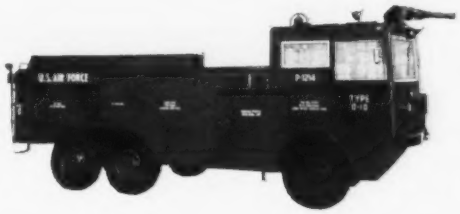
Type FFF FogFOAM Nozzle with FogFOAM screen discharges wide pattern of FogFOAM. Also available with shaper to discharge long solid FOAM stream. For 1½", 2½" and 3½" hose lines. Approved by Underwriters' Laboratories, Inc.

TYPE SG-60 WaterFOG Nozzle with FF FogFOAM extension unit attached

Rockwood offers you 4 types of turret control

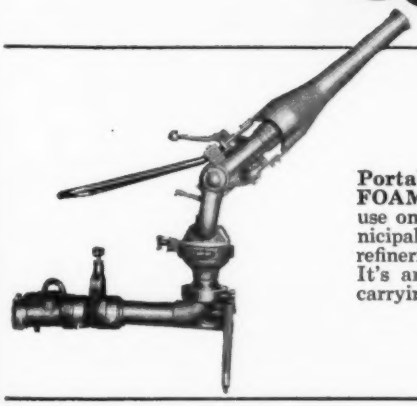
...and any Rockwood turret gives you 4 types of discharge (1) FogFOAM, (2) Solid FOAM stream, (3) WaterFOG,(4) Solid water stream

Remote Hydraulic Control Single Type FFF FogFOAM Turret Nozzle on Type 0-10 U. S. Air Force crash rescue fire fighting truck. Similar turrets can be supplied for oil refineries, chemical and industrial plants and municipalities. Hydraulically operated dual turrets also available.



Remote Manual Control Type FFF FogFOAM Turret Nozzle provides efficient operation of turret from driver's seat within truck cab — for small municipalities, airports or industrial properties where limited personnel is available.

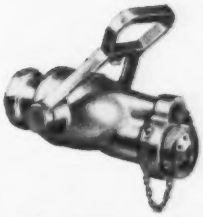
Direct Manual Control Dual Type FFF FogFOAM Turret Nozzles — can be operated directly by firemen from cab roof.



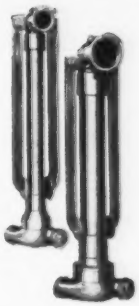
Portable Type FFF FogFOAM Turret Nozzle for use on fire hose lines by municipal fire departments, oil refineries and industrial plants. It's arranged for convenient carrying on fire trucks.

ROCKWOOD

WaterFOG Equipment



Type SG-48 WaterFOG Nozzle. Easy to handle. Discharges high or low velocity WaterFOG or straight water stream.



Lightweight Rotating Cellar and Attic Pipe. Fights fires in cellars, attics, under piers, bridges, etc. Also available in a short unit with swivel but without extension barrel.

Type N22 WaterFOG Nozzle. Discharges high velocity WaterFOG. For general use around live electrical equipment.

Type N23 WaterFOG Nozzle with Swivel Handles. Discharges high velocity WaterFOG with higher discharge and greater range than Type N22 Nozzle.

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PORTABLE FIRE PROTECTION DIVISION

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Tri-State Communications Network

Greenfield, Massachusetts, is the center of a fast-growing radio network serving fire departments and Civil Defense organizations in three states. Here's the story of how this network came into being.

STRUCTURALLY, the red brick firehouse at Greenfield, Massachusetts, is only 20 years old. Still, it has an appearance of age. The architecture is typical of old New England, even to the white cupola at its top. However, "oldness" applies only to the style of the architecture. There is nothing "horse and buggy" about the way the department operates.

Today, Greenfield is the focal point of a new venture in mutual aid control, a three-state communication network for controlling response of fire departments during major fires and other emergencies.

Eventually 46 communities in Massachusetts, New Hampshire and Vermont will be equipped with transmitters and receivers. Under the General Electric Company's system of "simultaneous monitoring," a single receiver is employed to hear messages simultaneously not only from the local system but also from the Greenfield control station.

As a result of the new radio link, rural communities in participating New England towns are receiving quick fire department assistance of the type usually found only in larger cities.

For example, two-way radio enables Greenfield Control Center to dispatch as many as 35 pieces of equipment within a matter of minutes to any town in the mutual aid area that might need assistance.

Mutual aid is not new to the northwestern Massachusetts area. More than two decades ago, a disastrous fire swept a five-and-ten cent store, a combination meat market and grocery, and offices and apartments in the Greenfield community. The local department and a handful of other fire departments brought the flames to a halt. However, following this fire — shortly after November 30, 1933 — fire chiefs from Greenfield, Turners Falls, Shelburne Falls, Whately, South Deerfield and Millers Falls set up and put into use what they called a "mutual aid card-plan."

Fire Chief Stephen R. Zanieski of Greenfield operates two-way radio equipment. Rectangular box mounted at right of dashboard contains simultaneous monitoring system. Movement of a toggle switch permits communication through a single transmitter, with either the local system or the Greenfield Central Station.

Under this system, the participating communities were issued running cards which listed the order in which each department was to be called, the capacity of available pumpers,

(*Continued on page 60*)

Tri-State President Roy Turton (left), Chief of the Shelburne Falls, Mass., Fire Department, confers with Chief Walter R. Messer, Keene, New Hampshire, (right), and Chief Michael Zaluzney of Vernon, Vermont. Radio equipment in background is installed at Tri-State's tower located on a mountain four miles from Greenfield.

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It's REVISED: First published in 1936, the present volume is the sixth edition. It incorporates not only important new material on communications and fire alarm systems, auxiliary water supply, police and fire integration, etc., but also the broad experience of those who have used the earlier editions in day-to-day administration.

It's WIDELY USED: Some of the many cities which have taken, or are conducting group training courses based on this text are:

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Use the handy order form to join the ranks of leading fire service officers who are making daily use of this book.

MUNICIPAL FIRE ADMINISTRATION, Sixth Edition, 1956, 442 pp. Clothbound.

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1313 East 60th Street, Chicago 37, Illinois

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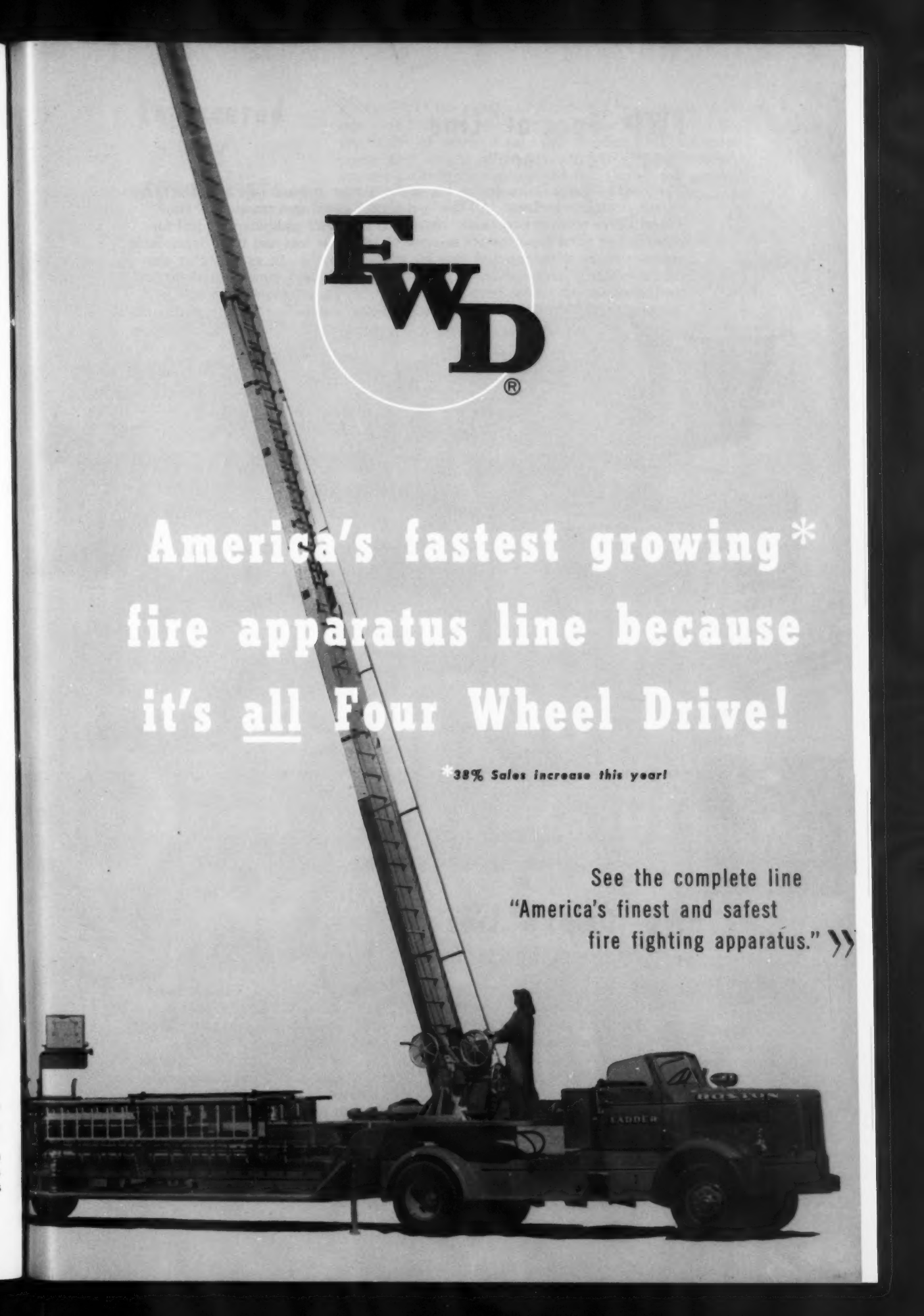
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See the complete line
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fire fighting apparatus." »
BOSTON
LADDER

FWD "Special" Line

"500", "750", "1000"

The FWD "Special" line brings big engine power and safety within the range of cost-conscious budgets. All the "get-there" speed and traction of Four Wheel Drive without expensive "extras" in trim and equipment. Ideal for suburban or rural departments because of their low cost and their dependable traction where water supplies may be off the highway. In any weather they handle better in traffic or travel through hub-deep mud, sand or snow to get to fires where two-wheel drive trucks can't go! Three models with 500, 750 or 1000 GPM capacities. Rugged "special" protection for any community!

39 models that cut run time safely... w

FWD "Deluxe" Line

"500", "700", "1000", "1200"

America's finest pumper line! Four powerful models, with 500, 750, 1000 and 1250 GPM capacities. They are deluxe in every way, with higher horsepower engines and the finest in fire fighting equipment. For superior pumping capacity with simplicity and speed of control, FWD features a new pump built by Waterous and custom engineered specifically for the Four Wheel Drive chassis. Extra weatherproof equipment compartments, heavier frame and a 500 gallon booster tank add a reserve of fire fighting capacity . . . all in a smartly styled unit that will make a proud addition to your department. And, most important, FWD balanced weight proportioning and the powered front axle make these pumpers faster and safer for any fire run!

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Every FWD fire vehicle is engineered by a special division that has been specializing in Four Wheel Drive fire trucks for 42 years. Every unit applies FWD's famous power and weight proportioning that gives unmatched control for sharp cornering and fast traffic runs and up to 82% greater traction for slippery road conditions.

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...with Four Wheel Drive control

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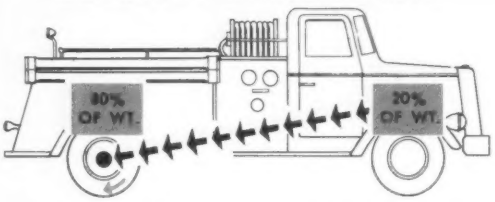
85' Aerials

FWD recently delivered 25 of these giant Aerials to one metropolitan fire department . . . the largest civilian purchase ever placed for fire fighting equipment at one time.

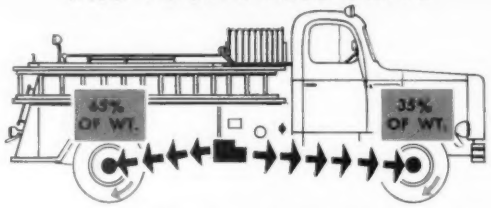
ORDINARY 2-WHEEL DRIVE



Spins easily because it is over-powered.

Drifts without power — may lock and be pushed into skids.

FWD FOUR WHEEL DRIVE



Less spin because power matches weight.

Power prevents locking and skidding—holds on turns, steers easily.

FWD balanced power and weight distribution gives unmatched high-speed safety

Only FWD pumpers have the patented power-divider transfer case and balanced weight distribution that give you *true* four wheel drive! Total weight is scientifically divided between the front and rear axle. The patented FWD power-divider sends power to both the front and rear axle in correct proportion to axle weights. This way every pound of weight works for better traction. The driver has powered control of all 4 wheels for sharper cornering, easier steering. This power and weight proportioning gives unmatched traction in mud, snow or sand. In traffic or in difficult terrain and weather conditions the best way to cut run time safely is with Four Wheel Drive control!

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builders
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and safest
fire apparatus

FWD®

THE FOUR WHEEL DRIVE AUTO COMPANY

CLINTONVILLE, WISCONSIN • Canadian Factory • KITCHENER, ONTARIO

Christmas Items

THE NFPA has just published two items which should be particularly useful to fire departments. The first is the newly revised fire safety folder, "Watch Out for Fire, Too, at Christmas Time." This is a colorful 3 by 6-in. envelope stuffer which outlines the fundamentals of fire prevention which should be applied during the holiday season. Space is provided on the back cover so that fire departments or business organizations can imprint their names before distributing the folder to the public. The folder can be purchased from the NFPA Publications Department, 60 Batterymarch Street, Boston 10, Massachusetts, at $2.50 per hundred and $20.00 per thousand. When ordering please specify G 24-C.

Also available is an attractive 8½ by 11-in. Christmas fire safety poster. This features an illustration of Sparky, the fire dog, who offers the advice, "Put fire safety at the top of the Christmas list."

The new poster also may be obtained from the NFPA for the following quantity prices: 12 posters for $1.00; 100 for $5.00; and 1,000 for $35.00. Greater discounts are given for larger quantity purchases. When ordering this poster, please specify JH27G.

National Electrical Code

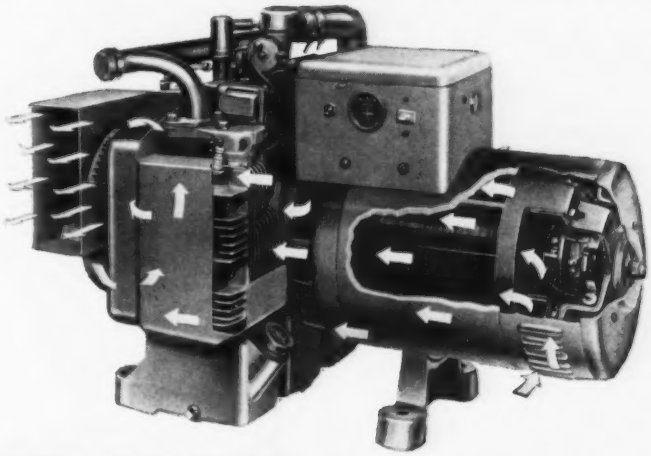
TWO new volumes of the official 1956 National Electrical Code have just been published. One of these is the 5½ by 8½-in., 704-page clothbound desk and reference edition known as Volume V of the National Fire Codes. This includes the complete 1956 National Electrical Code together with six NFPA technical standards on electrical equipment and a very useful index to electrical provisions of other NFPA standards.

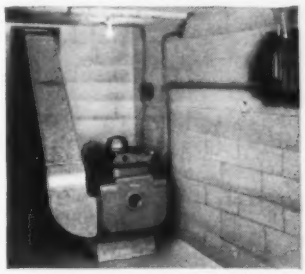
This clothbound edition is priced at $6.00 but is available for $4.50 postpaid to NFPA members who send full payment with their orders.

Also available is the "Red Book" pocket edition. This 480-page, 4¾ by 7½-in. volume also contains a useful catalog advertising guide.

The paperbound edition is priced at $1.00 (postpaid if whole payment accompanies order), and generous discounts are granted for quantity purchases.

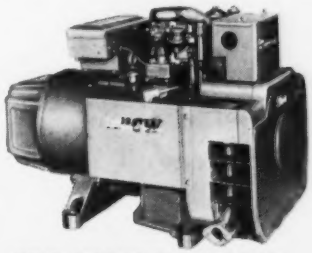
HOW VacuFlo AIR-COOLING
SIMPLIFIES INSTALLATIONS OF
ONAN ELECTRIC PLANTS





VENTILATES INSTALLATION AREA

Vacu-Flo cooling takes air from the room, through the electric plant, and expels it outside through a single duct. Eliminates fumes; keeps room filled with fresh air.



DUCT CARRIES EXHAUST LINE

On the Onan CW series of electric plants (7½ and 10KW), the exhaust pipe is carried through vent duct to the outside making only a single opening necessary.

Heated air expelled outside through single vent. Units can be enclosed or "buried"

Air-cooled Onan Electric Plants can now be installed in small, enclosed compartments; in isolated or underground rooms; or "buried" within a vehicle, far from the outside air. Previously impossible or difficult installations are now easy and practical with Onan Vacu-Flo cooling.

This exclusive system is a factory-equipped item, optional on any Onan air-cooled electric plant. A quiet-running, centrifugal blower in a specially-designed housing PULLS cooling air through the generator and over the engine . . . then EXPELS heated air through a duct to the outside.

The space required in a "buried" installation need be only a little larger than what the unit itself requires. Air-intake and vent openings plus an exhaust line are all that are necessary.

On vehicles such as trailers, display vans, fire and rescue trucks, and concession wagons, Vacu-Flo cooling makes it possible to mount the Onan plant anywhere in the body where space is available. On pleasure and work boats, Vacu-Flo cooling makes below-deck installations of air-cooled electric plants practical . . . cooling efficiently and quickly eliminating fumes from the area.

Onan Electric Plants with Vacu-Flo cooling operate more quietly than blower-cooled models . . . an important added advantage in many installations.

Write for Special Vacu-Flo folder.

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

3050 University Avenue Southeast, Minneapolis 14, Minnesota

ON THE FIRST PITCH!

PORTO-RAK HOSE STORAGE and LOADING UNIT

Since its introduction just a few months ago — Porto-Rak has been enthusiastically received. Saves valuable space. Holds 1,800 ft. of 2½" hose — proportionately more of 1½" — in an 8-ft. space (when loading table is detached). Roll it right up to the truck for complete hose reload — out of the way when not in use. Equipped with locking fiber wheeled casters.

FIRE HOSE DRYER ➔

The patented, electrically operated Circul-Air hose dryer circulates prewarmed fresh air through loosely coiled hose at the rate of 5 to 6 air changes per minute. Saves floor space, hard work and lengthens hose life. No other drying method is so fast — so economical — so easy to use. Circul-Air is the preferred drying method in over 4,000 leading Fire Departments.

ACCEPTED — APPROVED — RECOMMENDED

Approved by Underwriters' Laboratories . . . and Canadian Standards Association. Recommended by all leading fire hose manufacturers.

LABORATORIES APPROVED

NEW *Roto-Jet* HOSE WASHER AUTOMATICALLY WASHES — RINSES — DRAINS HOSE

ROTO-JET Washes, Rinses, Drains hose thoroughly and quickly. Hose is self-propelled. Simple one man operation. With or without detergents, ashes, dirt, mud and sludge are automatically scrubbed out and flushed away. Saves time. Lengthens hose life.

New . . . with Foot-Pedal Operation

THE A-Z FIRE HOSE WASHER

A-Z FIRE HOSE WASHER
Roto-Tables Sold Separately

This modestly priced washer drains and rinses the hose as it washes. 4 Roto-Jets constantly spray hose with clean, fresh water — all sediment is flushed through collecting pan and down the drain. The brisk action of the cleaning brushes moves the hose slowly through the washer. No strain. No fatigue. Turn tables keep the hose OFF the floor. They're excellent for reloading truck (several lengths may be stacked on each) or loading the hose dryer.

Write for New Folder

THE CIRCUL-AIR CORPORATION 575 EAST MILWAUKEE DETROIT 2, MICHIGAN

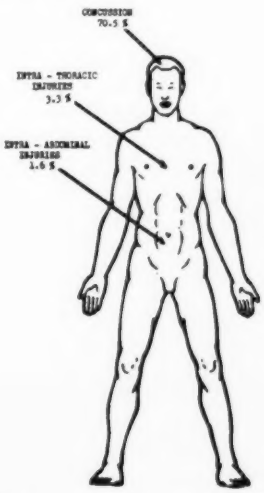
What Are the Chances for Rescue?

(*Continued from page 34*)

1. Seventy percent of the survivors received concussions resulting from blows to the head. Some were unconscious only momentarily — some for up to 17 days. You can't lead an unconscious person out of a burning airplane. You have to carry him!

2. In total, 64 percent of the survivors needed assistance from rescue personnel to evacuate the danger area. Looking to the future, you can see what this would mean if one of the big new jet transports should crash with 180 people aboard. If these statistics were sustained, about 90 would die, about 58 would require assistance to move and about 32 could escape unassisted. Rescuing 58 persons under crash fire conditions could be a tremendous problem!

3. Forty-four percent of the survivors had leg fractures! A man with a broken leg is not an easy person to rescue — particularly if you have only a 15-inch wide aisle in which to work and the only exits usable are the emergency windows which could be as small as 19 inches by 26 inches. The current emergency evacuation requirements of aircraft simply do not give adequate consideration to this 44 percent with broken legs and their rescuers! (Fuselage distortion and break-up may make the actual access problem more serious.)



Sketches above and at right show the percentages of injury to the human body based upon analyses of the four aircraft crashes.

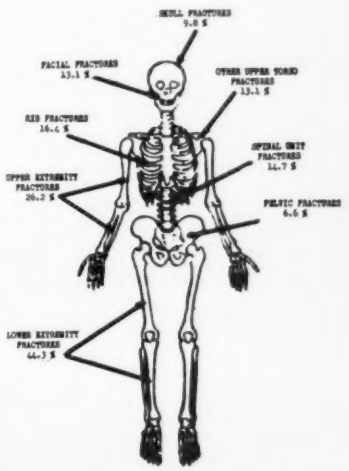
4. Twenty-six percent of the injuries involved fractures of the arms. A man with a broken arm may not be able to open an exit window or to operate the door release mechanism from the inside. This is a powerful reason why you, as a fire fighter, should learn the fundamental types of the exterior escape mechanisms found on common types of aircraft in service in your area.

5. Spinal injuries affected 14 percent of the survivors. This type of injury is one of the most difficult for a rescuer to cope with. Improper movement of the injured person can cause instant death, paralysis or equally damaging effects.

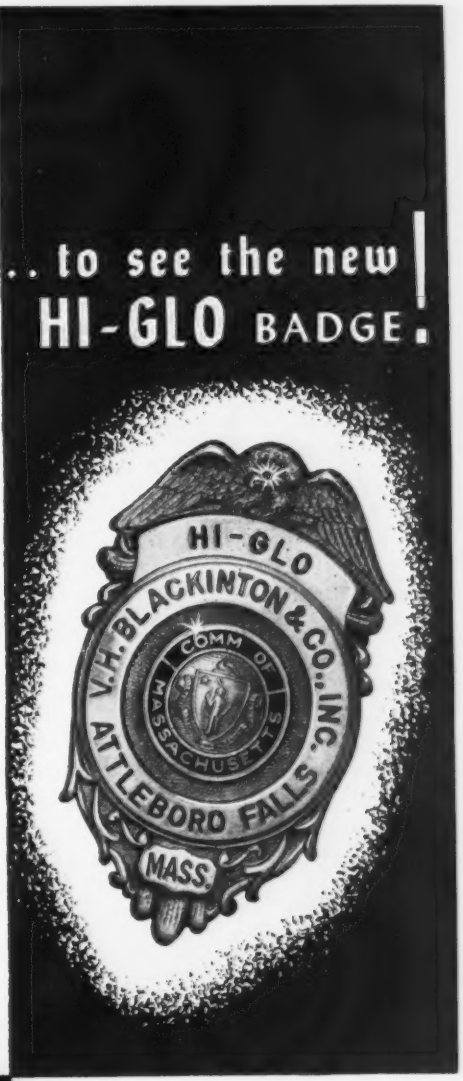
In addition, about 6 percent of those injured had fractures of the pelvis which likewise makes body movement very hazardous. Stretcher cases are thus involved and recognition of this fact should lead to adequate planning and training by fire departments and rescue crews.

Do not presume people are dead in crash wreckage just because they are not moving. The percentage of survivors rendered unconscious, as shown by this study, indicates that you may find many who, at first glance, you would judge dead but who need your assistance badly.

This fact-packed analysis of four actual aircraft accidents is based on data supplied by the Aviation Crash Injury Research Center of Cornell University. It is reported in full in NFPA Aviation Bulletin No. 163 (available for $2.00 a copy), and should encourage many fire department training officers and fire fighters to take a new look at aircraft rescue training responsibilities.



don't forget.....to see the new HI-GLO BADGE!



HI-GLO

The badge you can polish, polish, polish. It will never lose its golden color. Ruby colored stone set in the eye of the eagle.

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I.A.F.C. Convention

Miami, Florida—Nov. 12th to 15th

V. H. BLACKINTON & CO., INC.

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Monroe FOLDING BANQUET TABLES

WITH COMPLETELY FINISHED TOPS
Can Be Used Without Tablecloths

Write today for new catalog showing 58 models and sizes of Monroe Folding Tables.

Monroe Folding Tables, rigidly built yet very attractive, are designed for institutional use. May be used with or without table cloths, as desired. Also available in Formica and Ornacel special color and pattern types. Write for catalog with direct factory prices and discounts to industry, religious and educational institutions, clubs, lodges, etc.

MONROE TRUCKS for Folding Tables and Chairs

Transport and store your folding tables and chairs the easy, modern way on MONROE Trucks. Construction of Transport-Storage Trucks permits maneuverability in limited space. See Catalog.

MONROE Truck No. TSB

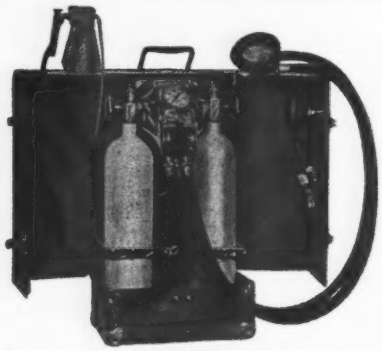
Complete Line of Folding Chairs

THE MONROE CO. 277 CHURCH ST. **COLFAX, IOWA**

HUNDREDS OF DEPARTMENTS

know from experience that Stephenson Resuscitators are the most effective and do more for the victims of respiratory accidents. Especially in cases of smoke suffocation, gas poisoning, heart attacks, etc.

STEPHENSON PORTABLE RESUSCITATOR



SIMPLE DEPENDABLE SAFE

Write today for demonstration without obligation or for Pamphlet R-106

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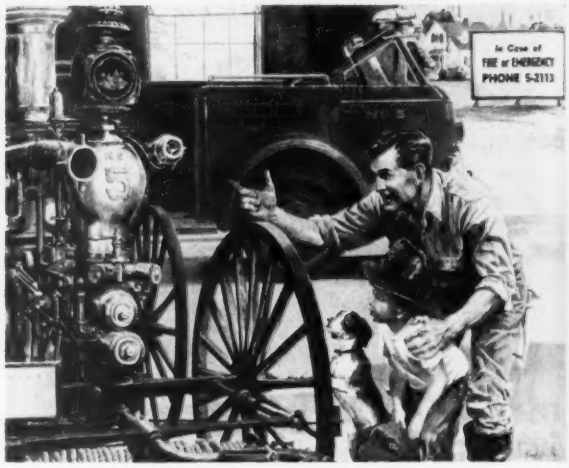
RED BANK NEW JERSEY

"Makers of the Harger Drunkometer and Breathalyzer for determination of intoxication by analysis of breath."

Represented in Canada by WILSON & COUSINS, Toronto



1957 Fire Prevention Calendar

FOR the second consecutive year Brown and Bigelow, St. Paul, Minnesota, one of the leading calendar publishers, has prepared the official calendar of the National Fire Protection Association. The 1957 version features a four-color reproduction of a painting by William C. Griffith as shown above.

The calendar, ordered as "remembrance advertising," can be personalized for any community by including the name and telephone number of the fire department as well as the identification of the merchant who distributes the calendar. The story of the National Fire Protection Association, explaining its activities as a nonprofit technical organization, is printed underneath the pad of each calendar.

Brown and Bigelow is now in its 60th year of producing calendars. Fire departments or insurance organizations or any other interested persons can order copies of this calendar by writing to Brown and Bigelow in St. Paul, Minnesota.

The calendar is available in the following sizes: "jumbo hanger," 29 by 43½ inches; 18 by 27 inches; and 14 by 21 inches.

A-Bomb Thermal Effects

THE United States Federal Civil Defense Administration has just published a report on Operation Cue, held at the AEC Nevada test site May 5, 1955, under the title "Cue for Survival." This report contains official information on thermal effects of the A-bomb burst and will be useful therefore as a source of this information. "Cue for Survival" is a 6- by 9-inch pamphlet, 172 pages. It may be purchased from the United States Superintendent of Documents, Washington 25, D. C., for 50 cents.

Fire Prevention Week Contest

THE 1956 Fire Prevention Week Contest will close on November 30. All entries must arrive at the NFPA by that date. Judging of the entries will take place during December and the winners will be announced early in January, 1957.

Fire departments who want to send entries should address them to: Contest — National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts.

Washington Post Photo

Something to Consider

FIRE fighters should be concerned with structural problems, because their own safety is often dependent upon the stability of a building. Fires may spread because of faulty construction, and fire fighters should always be alert to those factors which can lead to such trouble.

The photo above shows how a modern office building shared a party wall with a very old residential building. Notice that the latter had wooden joists in the wall as well as remnants of old flues. When the old building was demolished, prompt repair was needed to protect the larger structure from the elements.

While no fire was involved, this photo does show a typical case of a common party wall which might be found in a number of downtown structures of municipalities.

Incidentally, here the old building has left prints of floors, rooms, stairways and shafts in much the same fashion as prehistoric creatures left their imprints on rock.

Sparky's 1957 Calendar

THE new Sparky fire prevention calendar for 1957 has just been published. It is an attractive 12 by 16-in. sheet with illustrations of Sparky pointing out fire hazards for each of the twelve months, beginning with defective heating equipment and stoves in January and ending with a wish for a fire-safe Christmas in 1957.

The new calendar is available from NFPA at $1.00 for 12 copies; $5.00 for 100 copies; and $35.00 for 1,000 copies. Greater discounts are given for larger quantity purchases. When ordering please specify JF29G.

A "natural" for fire fighters!

FIRE PROTECTION FOR CHEMICALS

5⅞ by 8¾-in., 152 pages

$3.00 per copy.

Write to

National Fire Protection Association

60 Batterymarch Street, Boston 10, Massachusetts

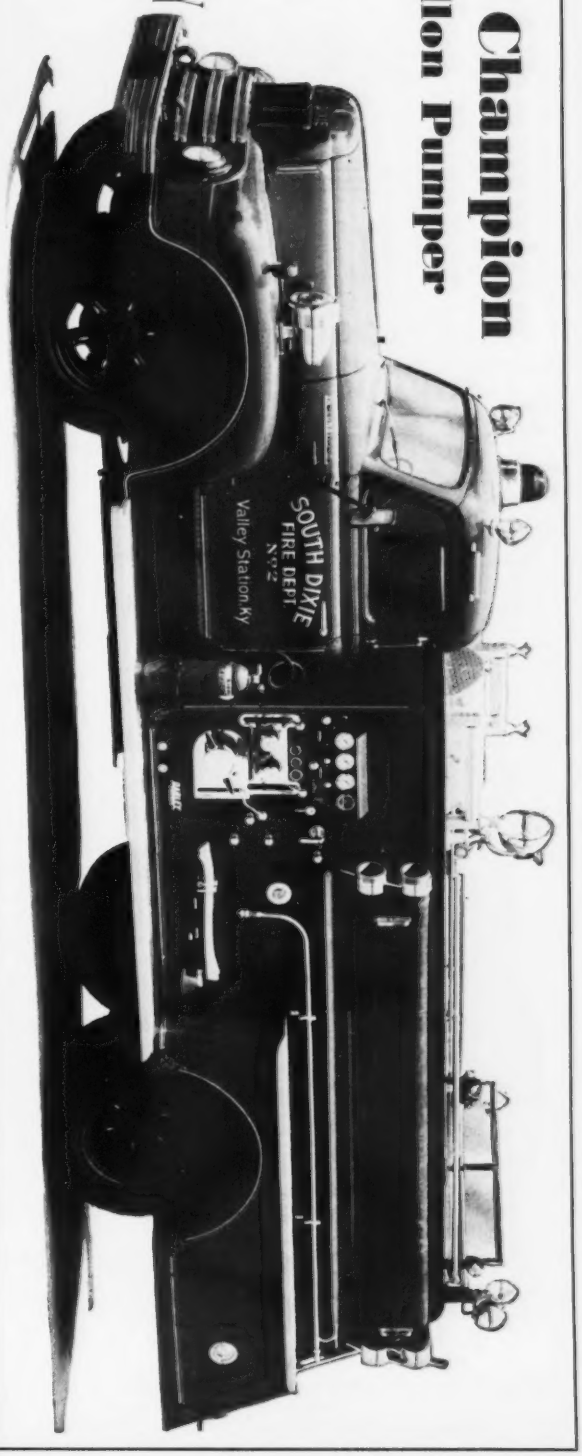
Darley Champion

750 Gallon Pumper

Because we make both Fire Pumps and Fire Apparatus, we can and do give you everything of the best and save you money, too.

W. S. DARLEY & CO.

Chicago 12

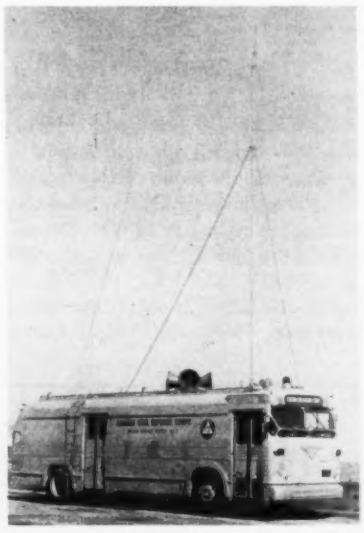


CHICAGO'S RADIO COMMUNICATIONS

FIRE Commissioner Anthony J. Mullaney, who serves as Director of the Chicago Civil Defense Corps, reports that the Chicago Fire Department has a new radio communications system. At present 191 mobile units are in operation, including chief's and executive's automobiles, ambulances, and at least one piece of fire apparatus in each fire station. In addition, each division and battalion chief's car carries two "handy talky" sets for fireground communications.

The entire city is very adequately covered by three radio towers, two of which are 168 ft. high with the other tower being 218 ft. high. In addition to the fixed towers, the Chicago Civil Defense Corps maintains a mobile control center which is able to maintain contact with the city fire department at a distance of 65 miles. Commissioner Mullaney points out that the control center is also able to contact Milwaukee, thus demonstrating its utility as an emergency means of mutual aid communications.

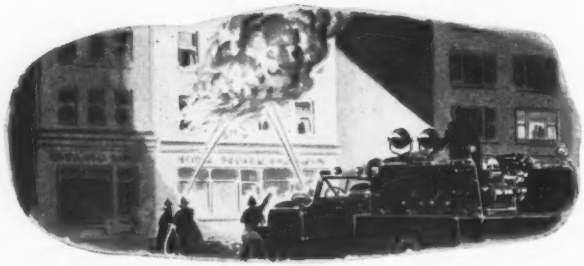
In connection with the new radio facilities, a radio operations manual has been prepared and issued to members of the fire department. This manual takes advantage of the best recognized national standard practices as modified to meet the needs of the Chicago Fire Department. In actual operations, the first piece of radio-equipped apparatus to arrive at an alarm maintains radio communication with fire alarm headquarters until a command car is designated for the particular fire. Usually this command car will be one of the chief's cars assigned to respond to the alarm. All communications with the handy talky sets in use on the fireground and with fire alarm headquarters will be cleared through the command unit at major fires. Incidentally, the Chicago Fire Department was instrumental in originally developing the handy talky radio. In 1939, the Motorola



Bus-type command vehicle operated by the Chicago Civil Defense Corps. It also serves as a mobile command center for major fires and other disasters. (See October, 1955, FIREMEN.)

KOHLER Electric Plants

...independent electricity for municipal and volunteer fire departments



MODEL 1.5M2S, *1500 watts, 115 volt AC. Manual starting. 2500 watt AC portable models also available.*

Portable 1500 watt Kohler model provides reliable power for floodlighting night fires—and for smoke eradication, power tools, resuscitators, pumpers, rescue equipment. Compact design, has 4 receptacles, pilot light, double carrying handle. Rubber-tired hand cart available. Other sizes, from 500 watts to 35 KW, include stand-by models for sirens, alarm signals, communications, when central station power is cut off.

Civil defense units use Kohler automatic stand-by electric plants to safeguard lighting and communications at headquarters, shelters, first aid stations, hospitals; portable models for rescue trucks. Write for folder N-10.

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

Company was doing laboratory research with the idea of a portable radio, and the Chicago Fire Department cooperated in carrying out field trials and tests of this equipment. Commissioner Mullaney gave a report on the progress of this development at the NFPA Annual Meeting held in Chicago in May, 1939. The following year, with the start of World War II, the British Government ordered 4½ million dollars worth of the handy talky portable radios; and subsequently the units have come into widespread use in both the fire service and the military services.

Commissioner Mullaney further reports that through CD matching funds, Chicago has obtained fifteen new 15 and 25 KVW Onan generators for use in obtaining emergency power supplies. These have been distributed to provide electrical service for the police and fire departments, hospitals, and other emergency locations in the event of enemy attack or power failure due to other emergencies. One of these new generators has been installed in the basement of the Chicago City Hall to provide emergency power for the central fire alarm office. Primary current for the fire alarm system and office comes from two separate electrical services entering from different ends of the block. There is also a small battery system for the private fire department telephone system which is arranged to provide emergency fire alarm transmission for eight hours. However, the new generator automatically provides current to operate the system in the event of power failure and is arranged to go into operation in 3 seconds following current interruption. The emergency generator is powered by an automatic gas supply with a gasoline engine in reserve in case of a gas supply failure.

Also to be provided for the Chicago Fire Department are 3 new lighting trucks for which plans were developed in the Fire Department Maintenance Division. These trucks not only will have banks of the latest type of floodlights, but will provide substantial amounts of electric power for operation of various tools and appliances.

Say that you saw it
in FIREMEN magazine
when writing to advertisers

POWHATAN
Improved Industrial Fog Nozzle

1½" size
Satin Finish

Economically Priced
Scientifically Machined

- Reduces Water Damage
- Delivers a Protective Water Curtain
- Finger Tips Operation
- Straight Stream or Wide Range of Fog

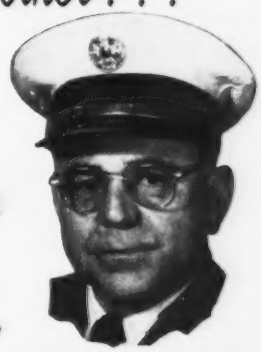
Powhatan — since 1892 in the same location — has long been one of the largest producers of Industrial Fire Protection Items. The new No. 250 Industrial Fog Nozzle continues our high standard of quality.

POWHATAN BRASS and IRON WORKS
RANSON, WEST VIRGINIA
Phones 93 & 94 Charles Town, West Virginia
Established 1892

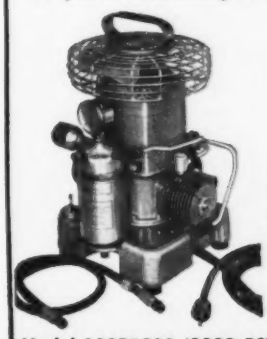
From one chief to another . . .

"The Cornelius HIGH PRESSURE AIR COMPRESSOR IS PROVING ITS VALUE TO US MORE DAY-BY-DAY"

— Chief W. L. Hydaker, Lima, Ohio



The chief commends the Cornelius Compressor in his annual report: "The bank of cylinders containing washed compressed air which we installed at our Central Station during 1954 proved to be very unsatisfactory, and we purchased and placed in service during 1955 a Cornelius 3000 p.s.i. air compressor which has solved the problem of keeping our Air-Pak cylinders at the proper pressure at all times, and in addition, it enables this department to keep an ample supply of compressed air in cylinder storage for emergency use."

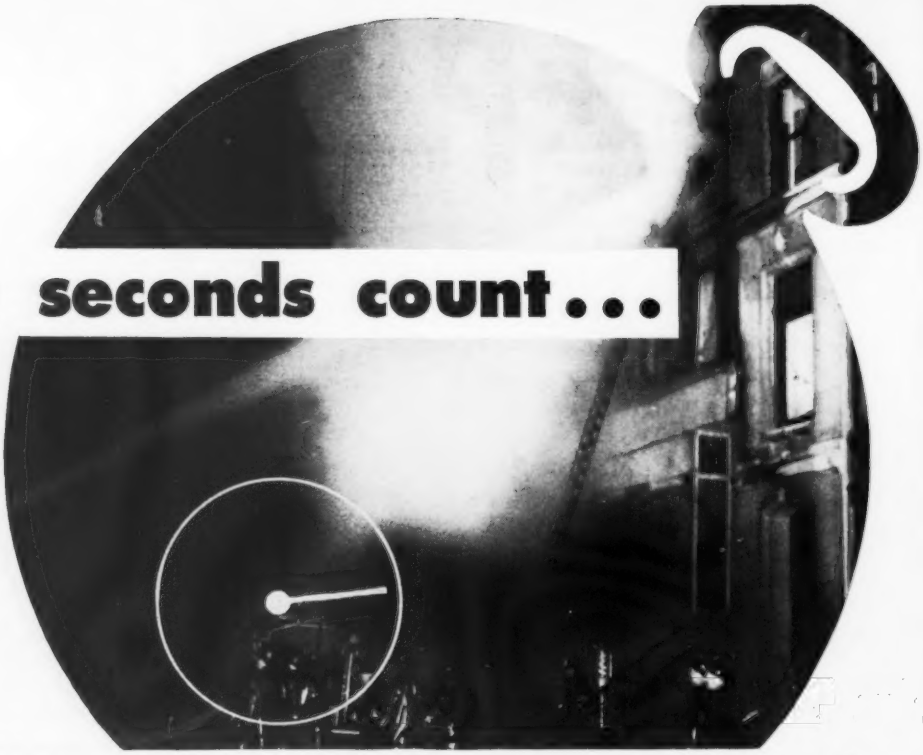


Model 130R1500 (3000 PSI)

Be sure the men in your department have the protection and confidence inspired by an abundance of pure, fresh air supplied by a Cornelius compressor. Write today for FREE catalog or call your equipment distributor for a demonstration.

THE Cornelius COMPANY
550 39th Avenue N.E., Minneapolis 21, Minnesota

When seconds count...



Audio HAILER gets your orders across *Instantly!*

Fire chiefs know a command not heard can mean the difference between life and death at fires. But there's no chance of this happening when an Audio Hailer carries commands through the deafening racket. Now fire chiefs can get their orders across—*instantly and clearly.* Just press the trigger . . . and commands are amplified *1,000 times!* Cut down on fire-fighting hazards and property damage by making commands heard—*instantly and clearly.*

Besides emergency and rescue work, an Audio Hailer is also a valuable aid for regular training sessions. Ask your supply dealer for a demonstration.

AUDIO HAILER®

PORTABLE • LIGHT-WEIGHT
SELF-CONTAINED ELECTRONIC MEGAPHONE
PISTOL GRIP • WEATHER-PROOF • BATTERY OPERATED

Clip to letterhead or paste on post card

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805 Middle Neck Road, Great Neck, N. Y.

I would like ☐ Brochure, ☐ Demonstration of the Audio Hailer Electronic Megaphone

FIRE CHIEF_____

CITY_____ STATE_____

False Alarm Penalty

ON JULY 1, a new amendment to the New York State law dealing with false alarms of fire went into effect. It allows a sentence of as much as a year in jail, a $1,000 fine, or both.

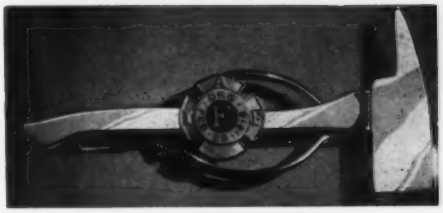
The first person to be arrested for this offense was a man picked up by White Plains police and charged with turning in three false alarms on the morning of September 14. On the following day, the man received the maximum sentence from City Judge Seymour Robinowitz, who fined him $1,000 and sent him to the County Penitentiary for one year for "malicious mischief convictions for turning in three false alarms." If the man cannot raise the $1,000 fine he will serve another 200 days.

The sentence actually was given for just one false alarm. For each of the other two alarms, also malicious mischief charges, he was sentenced to a year in the penitentiary, but all the sentences are to run concurrently.

The new amendment in the State Law echoes the sentiment of the New York City Administrative Code which was changed in September, 1954, to increase false alarm punishment from a maximum of thirty days to one year, while the maximum fine was increased from $100 to $1,000. This change occurred shortly after three fire fighters were killed and eleven injured during response to false alarms. The City Fire Department also launched a special campaign to gain the cooperation of parochial and public schools, the courts, newspapers, radio and television stations.

"Awright, you guys! One bounce is enough!"

"The Axe of Recognition"



The most popular tie clip among fire fighters everywhere. Chrome plated, shaped in the pattern of a fire axe.

Made by a Fireman for Firemen

Plain Axe
$1.50

With Button of I.A.F.F. as shown
$2.25

Order direct

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1032 MALZAHN
SAGINAW, MICH.

ANY WATER SOURCE NOW USEABLE!

The new Float Dock Strainer makes most any stream or pond useable for fighting rural fires or for filling your tanker. Float Dock will draft in deep or shallow water — off the bottom and drafting always the cleanest water with never a whirlpool or loss of suction at any time. Saves wear on your pump, too.

Strainer drafts just below the surface and down to the last few inches.

WRITE your distributor or manufacturer for brochure and prices. Specify hose size.

Manufactured Only By
FOL-DA-TANK COMPANY
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EMERGENCY POWER
when you need it with a
WINPOWER
PORTABLE ELECTRIC PLANT

Operates smoke ejectors, flood lights, pumps and radio during fire emergencies. *Lives can be saved* when you are equiped with Portable Electric Power. Also permanent station installations with automatic line transfer controls which automatically cuts in stand-by power during failure or disaster. Investigate now—write for full information, illustrated folders and prices.

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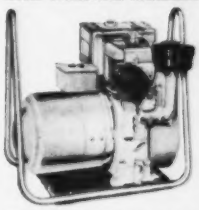


OTHER MODELS UP TO 100 KW

WINPOWER MFG. CO.
Dept. G-711, Newton, Iowa

Letters to FIREMEN

Dear Sirs:

Our village of approximately thirty-five thousand (35,000) population has the Council-Manager type of government. The village manager is a proponent of an integrated police and fire system. I heartily disagree with a combined system, feeling one of the services will suffer.

Will you please send me as much information as possible in regards to the virtues or shortcomings of such a system. I would appreciate a quick reply.

Respectfully yours,

R.F.E.

Dear Mr. E.:

We are in agreement with the observation in your letter of August 22 that a combined police and fire department will be detrimental to at least one of the services affected. We understand that this is also the feeling of the police service.

We are enclosing a page from our NFPA FIREMEN magazine which comments on combined police and fire departments.

None of the studies that we have seen of combined police and fire departments pretend to affect any appreciable economies. Generally, the police work shorter hours than the fire fighters, and an additional manpower requirement is the result of a combined service.

Many of the municipal officials who have been considering the combined police and fire services have done so because they felt it would lessen the number of administrative officers who report to the chief administrator of the municipality. Apparently, they do not realize that in having only one administrator for police and fire, they do not get good professional advice covering both of these vital services. Accordingly, one or both of the services suffer.

Where a community is too small to afford a full-time department, we have recommended that they have a professional fire chief, officers and apparatus operators, and supplement this by paid call fire fighters who may be employees of other municipal departments, but who are under the direct jurisdiction of the fire chief in all fire department matters. Fire fighting is largely a teamwork operation, and we have seen no suggested provisions for combined police and fire services which in any way retain the fire company team.

Very truly yours,

WARREN Y. KIMBALL, *Manager*
Fire Services Department

Dear Sirs:

At the recent convention of this Association the question of combining fire and police departments arose. If the NFPA has any literature on this subject we will be pleased to have you send it to us.

Cordially,

CHIEF H.L.R.

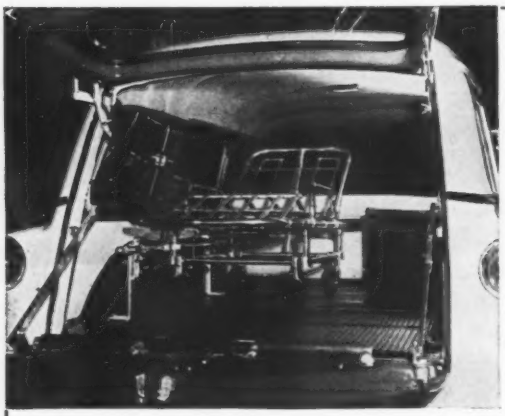
Dear Chief R.:

This is to reply to your letter of August 10 on the question of combining police and fire departments. We have discussed this in FIREMEN and are enclosing these articles.

We think that a key consideration often overlooked by persons recommending combined police and fire departments under a single department head is the fact that if the department is headed by a police officer, the city officials will have no access to competent advice from professional fire officers. On the other hand, if it is headed by a fire official, the police side of the work would be slighted. We have heard no one in either the police or fire service who felt that such a combination of services was desirable or even feasible. Two different types of work are involved, both of which should be full-time activities.

Very truly yours,

WARREN Y. KIMBALL, *Manager*
Fire Services Department



Washington

STATION WAGON CONVERSION COT AND STRETCHER KITS

Washington full senior size Kontour-Kot with 5" cushion tires, in a Ford country sedan.

WASHINGTON MAKES A COMPLETE LINE of station wagon conversion cot and stretcher kits — with models available to fit any make or model wagon. Installation is simple, and removal is quickly accomplished in a few minutes — leaving the wagon floor clear. Washington cots and stretchers are the first choice for any emergency vehicle, as well as the favorite for emergency rooms, industrial first aid stations and plant hospitals. If you are in doubt as to the proper kit, write us giving the type and model of station wagon, and we will advise you of the most suitable model, with prices.

Washington MAKES COTS AND STRETCHERS TO FIT ANY VEHICLE, OR FOR ANY FIRST AID ROOM OR HOSPITAL REQUIREMENT

Washington's COMPLETE LINE of ambulance cots and stretchers and other emergency equipment can meet your every requirement. For over 32 years, Washington has constantly featured the highest quality and best craftsmanship in the industry. First aid and rescue squads, fire departments, hospitals, factory hospital and first aid rooms are but a few of the thousands of satisfied users of Washington products.

Visit us at Booth No. 89 at the I.A.F.C. convention in Miami, Fla., November 12 to 16.

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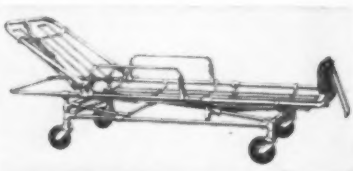

Two-level elevating ambulance cot, Model 52 — A Washington exclusive design.

Fold-A-Way emergency stretcher, Model 18. Light and compact, folds easily.

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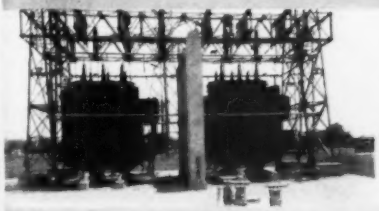
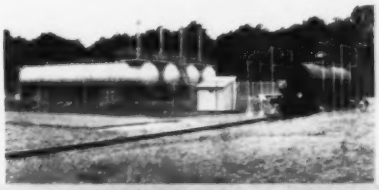
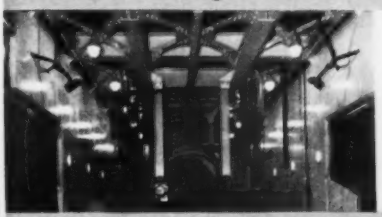
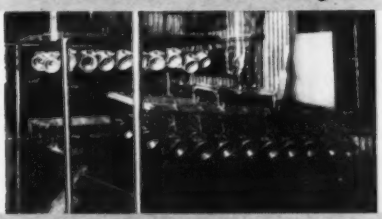
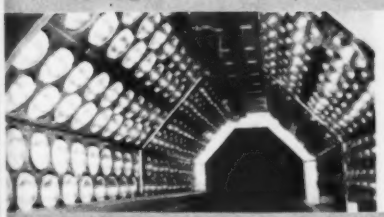
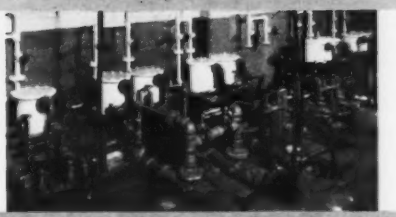
SPECIAL GRINNELL FIRE PROTECTION SYSTEMS
for those extra hazardous plant areas

Practically every manufacturer has what we call "special fire hazards" — extra hazardous areas in his plant where special protection must be provided to insure against possibly serious loss by fire. Some of these hazards are illustrated below, along with the special fire protection systems recommended to arrest fire without delay. And there are many other hazards, too, where major or minor supplements to ordinary-hazard fire protections systems are a positive "must" — if trouble is to be safely avoided. Grinnell, with 87 years experience protecting against fire hazards of every description, has a fire protection system for every need. Moreover, the installation of the proper Grinnell System usually serves to reduce fire insurance premiums drastically, often pays for itself in a few years. Here's a check list of extra hazardous areas found in many plants:

SPECIAL FIRE HAZARD		RECOMMENDED SYSTEM
 Transformers	 Propane tanks	**WATER SPRAY** Grinnell ProtectoSpray; Grinnell Mulsifyre Systems
Bulk oil storage tanks	Flammable chemicals storage	**FOAM** Grinnell ProtectoFoam System
 Engine test cells	 Dip tanks	**CARBON DIOXIDE** Grinnell CO_2 System
 Infrared driers	 Flammable liquid pumping stations	**DRY CHEMICALS** Grinnell Dry Chemical System

With a full range of equipment, you are assured of unbiased recommendations which will be fitted to your requirements. Grinnell Company, Inc., 261 West Exchange St., Providence, Rhode Island.

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THERMAL UNDERWEAR WITH
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Warmth without bulk for all men and women who work or play in chilling temperatures

The Navy needed a wonder fabric—warm enough for far-below-zero weather, yet unusually absorbent so it could be worn indoors or in mild weather without sweltering. And 100% laundry-foolproof.

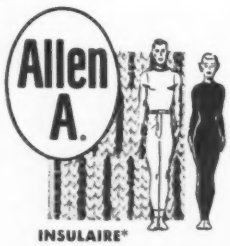
Here's the fabric they developed—in well-made shirts and drawers especially designed for active men and women. Now you can shed extra layers of heavy outer clothing—dress lighter, have more freedom.

This new fabric is made of down-soft cotton (won't itch), knitted in unique 3-dimension pattern. Traps body-heat in thousands of tiny "pockets" for perfect insulation.

Rigorously tested for warmth in arctic conditions. Can be machine-washed, tumble-dried. Won't shrink out of fit. If unavailable at your favorite store, mail coupon below.

Selected by the UNITED STATES OLYMPIC COMMITTEE for wear at the VII Olympic Winter Games

Tested and approved by the SUN VALLEY SKI SCHOOL



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Enclosed is: ☐ Check, ☐ Money order (no C.O.D.'s please).
Send me parcel post, prepaid:

STYLE	SIZE	QUANTITY	PRICE EACH	TOTAL
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#3645 (short sleeve shirt)			$5.00	
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#3649 (ankle length drawer)			5.00	
#3649/SLIM (ankle-length drawer)			5.50	
Ladies'—Red				
#L-752/LS (long sleeve shirt)			6.50	
#L-752/D (ankle length drawer)			6.50	
			TOTAL	

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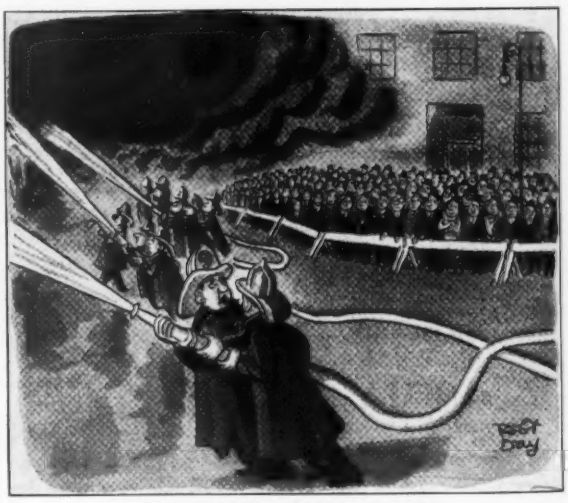
Street_____
City_____ Zone_____
State_____

New Pumper for Mt. Rainier

SERGEANT James W. Freeman of the Mt. Rainier Volunteer Fire Department in Maryland reports that his department has recently accepted this 750 gpm Pirsch pumper. Powered by a 250 horsepower Waukesha engine, the pumper features air brakes and electric sander for dual rear wheels. It has an extra 4½-inch soft suction connection in front of the engine, and soft suction is carried in a basket between the bumper and grill. There is also a 4½-inch suction connection on each side as well as a gated 2½-inch suction connection on the pump operator's side. The pipe connecting the 275-gallon booster tank with the pump has a clapper valve, and a separate valve to booster refill line is also provided. Note that the booster reels are located at lower right of the pump operator's panel. Two preconnected 1½-inch lines are loaded across the truck just behind the front seat. Metal 1½-inch hose covers which hold the lights on top are hinged to facilitate loading of the 1½-inch lines. The deck pipe is connected in valve to the pump and has a siamese connection so that another pump may supply the deck pipe. The main hose bed can carry 1,500 ft. of 2½-inch hose. Radio equipment is located in the space behind the pump panel. The pumper also has an alternator with a 250 watt, 120 volt transformer as well as two 120 volt outlets.



"Ever get the mad desire to suddenly whirl and let them have it?"

Reprinted by special permission of *The Saturday Evening Post*. Copyright 1956 by The Curtis Publishing Company.

Operator places a metal electrode on or underneath the victim's body and then places a glass electrode on the solar plexus and regulates power to provide sufficient breathing stimulation.

Electronic Resuscitator

FIRE departments and rescue squads may be interested in a new electronic resuscitator now manufactured by Batrow Laboratories, Inc., Branford, Connecticut. It represents an interesting approach to the problem of reviving persons overcome by smoke, immersion in water, or other incidents which call for artificial respiration.

This resuscitator uses electrical pulsation to activate the diaphragm rhythmically to stimulate breathing. It features a damped oscillation so that the first half pulse of the oscillation is predominant. This short pulse has a duration measured in microseconds (millionths of a second). The current is approximately 20 microamperes at maximum with a voltage regulated from approximately 0 to 60,000 volts.

Portable electronic resuscitator showing operator's panel and instruction board. The six basic steps for operating this device are clearly indicated on the panel above the resuscitator. The panel board has two lights indicating power and output, two 5 amp fuses, a power switch, and an intensity dial.

Operation of the equipment appears to be simple. A metal electrode or plate is placed under or on the victim's body, and a glass electrode, filled with inert gas under negative pressure, is then placed in the vicinity of the solar plexus. The intensity of the stimulating charge is increased to the point where the diaphragm contracts rhythmically. At the present time the resuscitator is manufactured to provide 18 cycles of breathing per minute. The intensity of the breathing contractions is regulated by the operator of the equipment who controls the power. At a demonstration in Boston, Massachusetts, recently it was shown that the electronic resuscitator activates the diaphragm of a person rhythmically and provides an exchange of more than 1,250 cubic centimeters of air for each cycle of breathing.

At the present time the Company is manufacturing the resuscitator in a sturdy cabinet measuring 14 by 16 by 14 inches and weighing slightly more than 35 pounds. According to the manufacturer, the resuscitator can be operated from 6 or 12 volts DC and 110 volts AC with power consumption of about 150 watts.

Oil Fire Control School

MORE than 500 fire chiefs and training officers from Washington and Oregon attended the Northwest Oil Fire Control School in Tacoma, Washington, September 14 and 15. This school was sponsored by the Western Oil and Gas Association and featured intensive two-day sessions of panel discussions, group meetings, and actual fire fighting. Particular attention was given to field demonstrations of petroleum fires, the fundamentals of control and extinguishing, and fire fighting training techniques. Those attending had opportunity to use water fog and other extinguishing agents on fire-involved tank "mock ups."

Correction Notice

IN THE October issue of FIREMEN magazine, the article on the Meadowood Fire Department stated that the Department protected a community of 1,200 population. Actually, the Meadowood Fire Department serves all of Cheshire County in New Hampshire which has a population of 50,000.

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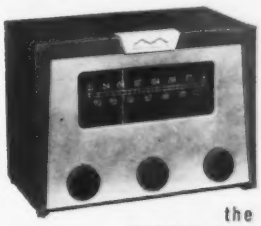
Now you can expand your communications system with the first really high quality FM receivers ever offered at popular prices. These ultra-sensitive new MONITORADIOS pull in weak signals loud and clear—built for round-the-clock duty to keep all stations constantly alerted . . . fully informed . . . effectively coordinated. Indispensable for police, fire, civil defense and similar emergency units.



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MINUTE MAN

MR-33, MR-10—Tunable FM receivers for powerful, static-free monitoring of all stations on either the 30-50 or 152-174 mc band. 3 μv sensitivity. 7 tubes plus rectifier.

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MRC-33, MRC-10—For the first time, a low cost crystal-controlled receiver of quality design. Pre-set to any frequency in the 25-54 or 147-174 mc bands. 2.5 μv sensitivity. 8 tubes plus rectifier. Crystal included.

Both units feature powerful 5" speaker, fully tuned RF stage, built-in squelch. Housed in rugged metal cabinets. 110-120V, 60 cycle, AC only. U.L. approved. The Minute Man—$64.50. The Signal Master—$76.50.

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"HALLIGAN TOOL"

1 Piece of No. 4140 Steel

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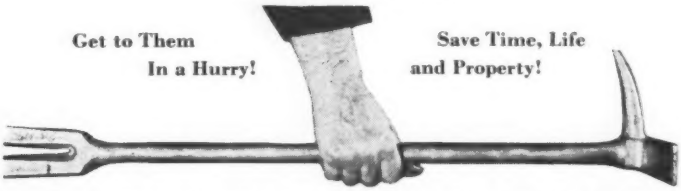

Save Time, Life
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FOR . . . FORCIBLE ENTRY — OVERHAULING — DEMOLITION — CRASHES — WRECKS — HEAVY LIFTING, ETC.

And Now . . . The 'New Look'

"HALLIGAN HOOK"

Deputy Chief Halligan has designed a new plaster hook.

It is very effective on TIN — WIRE LATH — 3-PLY VENEER — DOOR FRAMES, etc. IT IS PRICED LOWER THAN ANY COMPARABLE HOOK.

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★ New Yellow Rubber Stripes!
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YOU deserve the BEST PROTECTION OBTAINABLE for your hazardous work of protecting life and property against fire. The Mackinaw Safety Coat with new yellow stripes is the answer! Highly visible stripes are rubberized as part of the material . . . not painted, glued or sewed on. There is no substitute for the superior quality, design, fabric texture and safety features you get by specifying MIDWESTERN!

QUALITY UNEXCELLED

For complete information on our full line of safety clothing for firemen, see your Midwestern dealer. A letter to the factory will also bring you literature and materials for your inspection.

MIDWESTERN SAFETY MFG. CO. Mackinaw, Illinois
Manufacturers of the Famous MACKINAW Safety Coats

Fire Services, England and Wales, 1955

THE report for the calendar year 1955 on the fire departments of England and Wales by Harry M. Smith, Chief Inspector of the British Home Office Fire Service Department, summarizes the work of the 135 public fire brigades under his jurisdiction.

In this report Chief Smith mentions the completion of a special investigation of the large number of chimney fires which make up much of the work of the British fire services. Chimney fires for 1954, for example, numbered approximately 58,000 as compared to 67,000 other fire calls. The data collected on chimney fires has been turned over to the British Joint Fire Research Organization for analysis.

Chief Smith also called attention to the increasing amount of fire prevention work done by the various fire departments and the increasing acceptance of fire prevention advice by industrial managers.

The "Report of Her Majesty's Chief Inspector of Fire Services (Counties and County Boroughs, England and Wales) for the Year 1955" (18 pages, 6 by 9⅝ inches), is available from H. M. Stationery Office for one shilling net. It may be obtained in the United States from British Information Services, 30 Rockefeller Plaza, New York 20, New York, for 18 cents.

New Members in NFPA

The fire chiefs and fire departments listed below recently joined the Association. At present there are 16,750 Associate Members in NFPA including more than 2,200 fire departments. Currently a special membership drive is under way to raise total membership to more than 17,000. You can help NFPA to reach this goal by encouraging non-member fire departments to join this Association.

British Columbia: Chief D. F. Elliot, Oyama Volunteer Fire Brigade, Oyama.

Georgia: Chief P. L. Foster, Elberton Fire Department, Elberton.

Illinois: Thornton Fire Department, Thornton.

Maryland: Kensington Fire Department, Kensington.

Ohio: Parma Fire Department, Parma.

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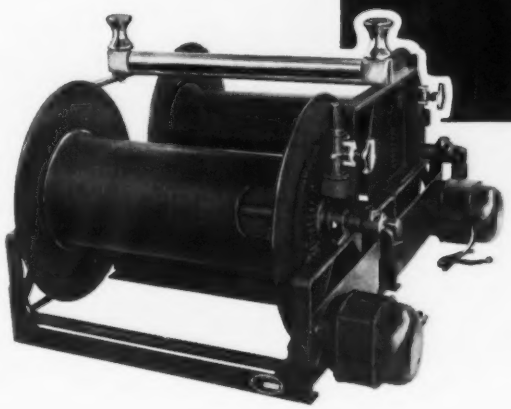
HANNAY FIRE HOSE REELS . . . HANNAY FIRE HOSE REELS . . .

HANNAY



Built *by* firemen *for* firemen, Hannay Hose Reels have served so faithfully for over twenty years that they are accepted as the standard of quality by thousands of firefighters.

Your men and your equipment deserve the finest. Make sure they *get* it. *Specify* Hannay Fire Hose Reels.

Sustaining Member

WRITE *for FREE 16-page catalog of complete line.*

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For your next equipment order . . .

GET THESE ITEMS INTO YOUR SPECIFICATIONS FOR NEW APPARATUS

Style 57
Patent Pending

SLIDE BOX STRAINER
Cast aluminum box with 2 rope lugs — brass female swivel connection. Box Size 7" x 8" x 3½" deep for 1½", 2" and 2½" swivel; Box Size 14" x 14" x 7" deep for 3" through 4½" swivel.

4 in 1 SPANNER HOLDER
Malleable iron with spring steel clips — stands approx. 10" high — for convenient, safe spanner storage on apparatus.

Style 56

HOSE BRASS GOODS OF EVERY DESCRIPTION

Boston Coupling Co.

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FIREMEN'S SHIELD LITE

Builders of Specialized Rescue and Fire Apparatus

GOLD CREST
SAFETY EQUIPMENT CORP.
Highway 22, P. O. Box 155
DUNELLEN, NEW JERSEY

IDENTIFICATION SIGNS PERSONNEL — ALL FIRE DEPARTMENTS

Standard made, white base plastic, fire engine RED finish — CHIEF, ASSISTANT CHIEF, CAPTAIN, LIEUTENANT, CHAPLAIN, VOLUNTEER, MEMBER, DRIVER, ENGINEER, SECRETARY, TREASURER, POLICE, AUX. MEMBER.

Priced: $1.25 pairs, 63c single
Special made designs as you wish 88c EACH
Minimum order 50 plates

— Special made —
S.30 for metal screws — as shown

Sold everywhere, circular on request, ask your fire equipment dealer.

E. B. LANE
32 GREENWOOD AVENUE
TOLEDO 5, OHIO, U.S.A.

Tri-State Radio Network

(*Continued from page 40*)

and the telephone numbers of the fire departments. From then on, the participants worked together during large fires.

During the ensuing years, the number of communities involved in the Mutual Aid System kept increasing and eventually included departments from northwestern Massachusetts, New Hampshire and Vermont.

In 1950, after many months of research, a study committee decided that a Central Dispatch Plan was the most feasible and Greenfield was chosen as Dispatch Center for a newly-organized Tri-State Fire Mutual Aid System. Officially, Tri-State went into business as of 8:00 A.M., March 15, 1950. Officers and men of the Greenfield department doubled in the role of dispatchers, controlling the movements of apparatus over 1,114 square miles. A start had been made — but as Tri-State grew, there was corresponding growth in the problem of communications.

On October 21, 1954, during a meeting of the officers and directors of Tri-State in Turners Falls, Mass., Deputy Chief Edmond F. Tetreault of Greenfield proposed the installation of a two-way radio communication system within the Tri-State organization. A survey committee was appointed to determine the benefits to be attained with such a system and recommended in March of 1955 that two-way radio definitely should be installed.

A ten-man committee was then named to carry the program through: Deputy Chief Tetreault and Deputy Chief Robert Mayers of Greenfield; Carlos Allen, Chairman of Franklin County Commissioners; Chief Earl A. Cosby, Erving, Mass.; Chief Eugene N. Graves, Whately, Mass.; Chief Lester M. Pierce, Montague Center, Mass.; Chief Floyd M. Dunnell, Jr., Northfield, Mass.; Chief Michael Zaluzney, Vernon, Vermont; Chief Walter R. Messer, Keene, New Hampshire; and Clayton D. Cromack, Fire Alarm Division, Greenfield, Mass. Tetreault was selected as chairman. On nomination and election of the Presidency, Chief Roy S. Turton of Shelburne Falls joined the group.

A bill for the amount of $4,000

Deputy Chief Edmond Tetreault (seated) of Greenfield confers with Lt. Raymond G. Roy, State Fire Officer for Massachusetts Civil Defense; Chief Eugene Graves of Whately, Massachusetts, who is a member of the Tri-State Radio Communications Committee and past President of Tri-State; and Chief Roy S. Turton, present head of the Tri-State Association.

was sponsored by the County of Franklin, Mass., through the efforts of Chairman Allen, to permit the County of Franklin to raise by taxation the sum to establish and maintain the base station facilities. The bill was passed by the legislature of Massachusetts and signed into law by Governor Christian A. Herter.

Applications were submitted to the Federal Communications Commission and a license granted on the 33.54 M.C. frequency, KCE 358. Also, licenses to cover the repeater 453.35 M.C. frequency KCF 20 and control 458.35 M.C. frequency KCF 21. Tests conducted throughout the area by the General Electric Company proved that excellent reception could be attained.

Then meetings were held with Civil Defense officials to stress the importance of Tri-State's radio plan to the overall Civil Defense effort. Forms requesting FCDA matching funds were submitted by individual fire districts. Approval was received for government appropriations covering one-half the cost and installation of a 250-watt base station with repeater and control units, one 3.5 auxiliary gas-type generator, one 1.5 auxiliary gasoline generator, thirty-three 60-watt mobile units, six 60-watt base stations with antenna systems and 13 three-way power supply portable units.

In the first round of appropriations 21 communities cooperating with the County of Franklin, Mass., supplied half of the matching funds. Proposals were mailed to leading manufacturers of two-way radio equipment and, after competitive bidding, the contract was awarded to the General Electric Company.

A second request for matching funds has been submitted to cover 19 additional mobiles, nine base stations, two portable units with allied equipment and one 2.5 kilowatt auxiliary generator. On installation, this will give Tri-State Fire Mutual Aid 17 base stations, 57 mobiles and 15 portables operating on the 33.54 M.C. band and three auxiliary generators.

A tie-in with Civil Defense on the State level has been accomplished with the installation by the Massachusetts Department of Natural Resources of radio equipment on the 33.54 M.C. band in the Sunderland Tower. Civil Defense messages over the Forestry frequency will be transmitted over the Franklin County frequency at that point.

Tri-State and Southwestern now are nearing the completion details of a communication system which will extend the existing network.

Model
#17
Beacon Ray
The famous Beacon Ray 360° revolving light, unsurpassed in clearing apparatus through traffic.
Dont
Miss
It!
Model
Q
Siren
Class Q and C coaster sirens surpass all others and lead a complete line of sirens and siren-light combinations.
Fire-Ball
light
The new Fire-Ball provides effective low cost beacon protection for volunteer's cars, for tankers or secondary apparatus.
Leading warning signals for leading fire companies are on display at Federal's I.A.F.C. Convention booth. It's a noteworthy display of progress, reliability and variety. Now is your opportunity to see and discuss Federal's famous line of warning signals. Again, we say, "don't miss it!"
Model
STH-10
Siren
A new improved vertical siren for municipal fire or disaster alarm.
FEDERAL SIGN
and SIGNAL
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8717

CAIRNS HELMETS

THE FIREMAN'S
FIRST LINE OF DEFENSE

LEATHER
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REGULATION
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OTHER STYLES

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PERSONAL
EQUIPMENT
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Avail yourself of the many advantages of buying ALL your personal equipment, from head to foot, from one dependable source — from a firm that assumes responsibility for the quality of EVERY item, and that stands back of it with a reputation gained in serving firemen for more than a hundred years. . . . Here is a partial list of the equipment we can supply, promptly. Many other items are described in our Catalog, sent on request.

FOR THE DEPARTMENT,

SECRETARY'S RECORD BOOKS
LOOSE-LEAF FIRE RECORD BOOKS
SECRETARY'S BLANK FORMS

Write for Catalog 350

CAIRNS & BRO., Inc. — Allwood, Clifton, N. J.

SINCE 1836

J. N. Shaughnessy of Auburn, President of the Washington State Firemen's Association, presents keys to a new Buick to Captain Cook.

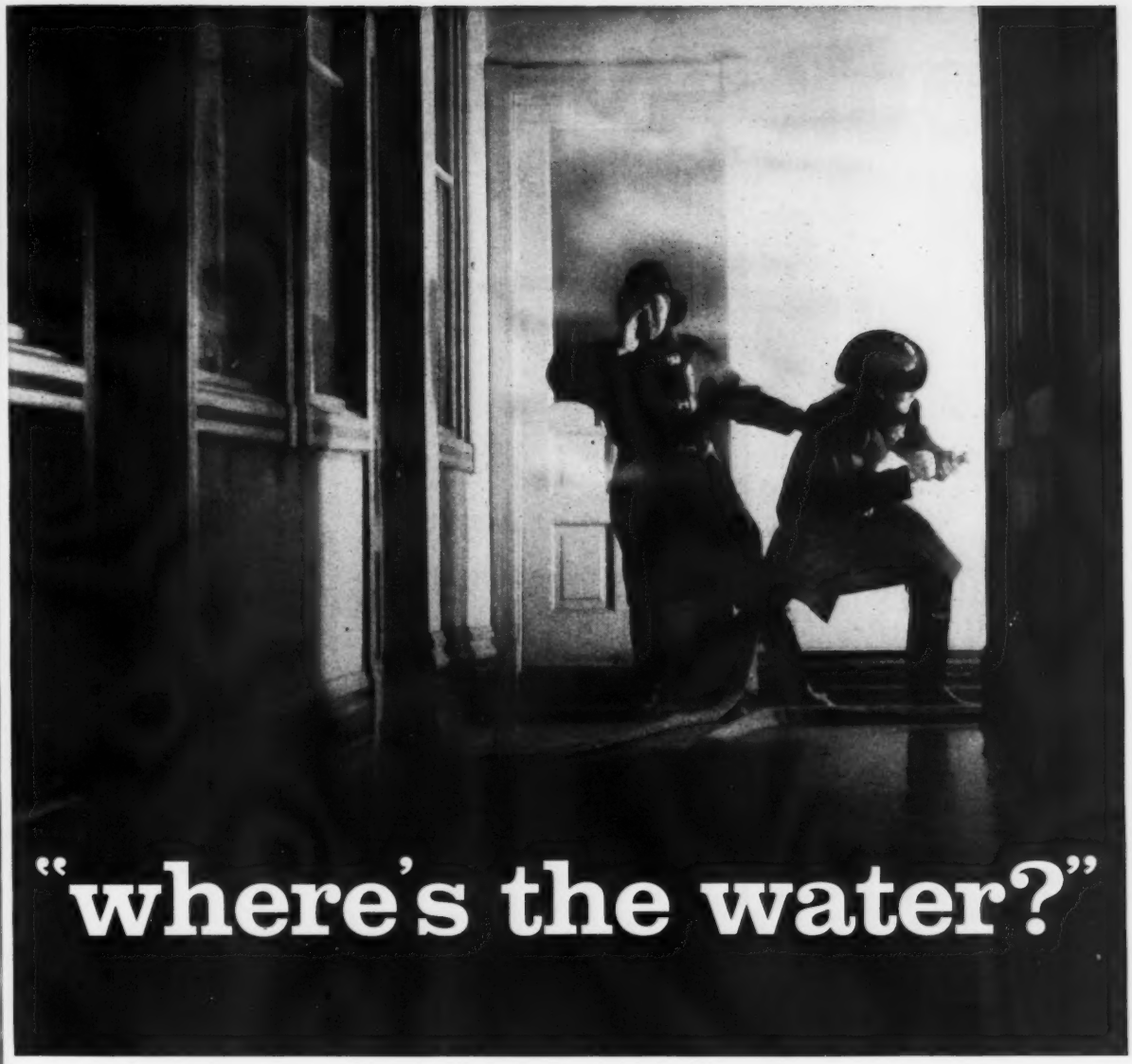
Captain Cook Retires

CAPTAIN J. R. Cook, for many years Supervisor of the Washington State Firemen's Training Program recently retired from that office. In appreciation of Captain Cook's many contributions to firemen's training, the Washington State Firemen's Association arranged a special banquet in Tacoma's Friendship Hall. For several months the 2,000 paid and 8,000 volunteer fire fighters throughout the State of Washington had been solicited by the Association to contribute funds for a retirement gift. On the night of the banquet Captain Cook was presented with a new Buick automobile as a token of appreciation from the fire fighters in the State.

In addition to participating in the State Training Program, Captain Cook at one time was captain of a ladder company in the Seattle, Washington, Fire Department.

Portion of the crowd of 300 fire fighters and friends who gathered in Tacoma's Friendship Hall for the banquet honoring Captain Cook.

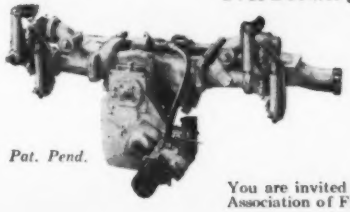
Plan now to get subscriptions to FIREMEN for *all* of your fire fighters during 1957!



new Waterous *Electro-Matic pump gets water to the fire in less time

The *Electro-Matic* is the first fire pump to offer power operation for all major pump controls. You get into action faster, during those precious early minutes. You start pumping without lost motion. New Waterous *Electro-Matic* gives you push-button controls that reduce the chance of error and offer greater protection to personnel. Main pump is engaged at the flip of a switch; the powerful rotary-gear primer goes into action with the push of a button; "open" and "close" push-buttons unlock, reset and lock the discharge valves; a simple "volume-pressure" switch sets the transfer valve. And that's not all. The *Electro-Matic* is an entirely new pump in design. It weighs less, requires less space and can be mounted in a variety of methods to meet requirements of all modern chassis. All this plus the features that have made Waterous pumps famous such as horizontally-split, *two-piece* case and full ball-bearing construction.

Free Booklet gives complete details. Your copy by return mail. Send for it today.



Pat. Pend.

WATEROUS *Electro-Matic*

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Dept. 203

*Registration applied for.

You are invited to inspect the new Electro-Matic pump at the 83rd Annual Conference, International Association of Fire Chiefs in Miami, Florida. See you at Booths 46 and 47, November 12 thru 16, 1956.

Look what's new

● **NEW styling** . . . beautiful, functionally-styled fire fighter.

● **NEW performance** . . . powerful new 270 H. P. engine . . . electro-matic pump with push-button controls . . . shorter turning radius.

● **NEW features** . . . bus type front axle . . . shorter wheelbase . . . larger, fully waterproofed equipment compartment over pump with large access doors on each side.

for 1957

from

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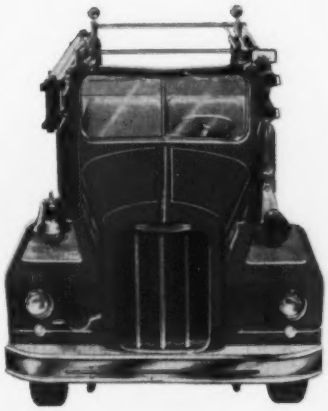

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A Special Report on the

NFPA Fire Marshals' Section

Here's a summary of the history and activities of an important group which operates as a Section of the National Fire Protection Association. Fire marshals and fire prevention bureau officers and personnel throughout North America can join this fast-growing group easily, to gain the benefits of exchanging ideas and information for professional improvement.

SINCE 1927, fire marshals of the United States and Canada have enjoyed the benefits of exchanging ideas, information, and advice on mutual problems, and general professional affiliation through the Fire Marshals' Section of the NFPA.

This important group of NFPA members evolved from Fire Marshals' Association of North America which was organized by a few state officials in 1906. In 1927, handicapped by a small membership, a vanished treasury, and no headquarters, this Association voted to become a Section of the NFPA.

Today the Fire Marshals' Section consists of nearly 300 state, provincial, county, and municipal officials whose main functions are in the fields of fire prevention and fire investigation. The Section elects its own officers, conducts its own meetings, and publishes for its members a Year Book and periodic bulletins. Current Chairman of the Section is State Fire Marshal Charles R. Scott of Ohio. Executive Secretary is Charles S. Morgan of the NFPA staff who carries on the headquarters functions from the Executive Office in Boston.

The Section enjoyed a 20 percent increase in its membership during the past year and continues to grow.

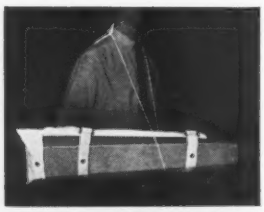
All municipal fire prevention bureau officers and other public officials in North America whose primary responsibilities are in fire prevention and/or fire investigation are eligible for Section membership. They need only join the NFPA, pay the regular Association dues of $12.50 and request enrollment in the Section. There are no special dues or other fees for Section affiliation. Two-thirds of the present membership of the Section is composed of municipal fire prevention bureau officers and inspectors. Others are from various County, State and Provincial offices.

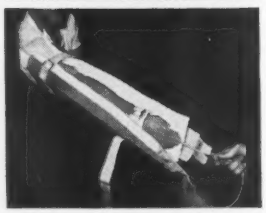
All municipal fire prevention bureau personnel are invited to join, particularly chiefs of fire prevention bureaus. If neither your fire prevention bureau nor its chief officer is an NFPA member at present they are missing a special and valuable opportunity for professional improvement which is offered through the Fire Marshals' Section.

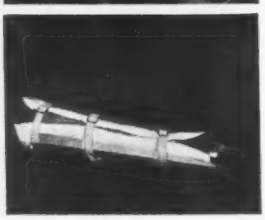
The Section has just published its 1956–1957 Year Book and Membership Directory and is planning its annual mid-year conference which will be held at St. Louis, November 26–28 in conjunction with the NFPA Fall Conference. Fire prevention bureau officers, whether members or not, are invited to participate.

The NEW Stryker EMERGENCY SPLINT designed by a leading Orthopedic Surgeon

. . . Now, for the First Time in the History of First Aid — A SIMPLE, EFFECTIVE EMERGENCY SPLINT *







The Stryker Emergency Splint combines shaped aluminum half sections with built-in padding and traction to completely immobilize the limb. The patient can then be handled with comfort. Moderate, uniform compression controls bleeding and swelling. X-rays can be taken without removing the splint, allowing the fracture to be set immediately. Weight, 5 lbs.

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PRICES

No. 6065 Stryker Emergency Splint, pair in protective cover 59.00
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Bill the address below.
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Occupancy Fire Records

SOME useful material for fire station libraries is included in this list of occupancy fire records, prepared by the NFPA Fire Record Department. There are now 23 illustrated bulletins in this popular series, with each bulletin reporting fire experience for a particular type of occupancy.

These bulletins are particularly useful to fire fighters who make inspections, since they provide good analyses of why the fires started and the factors which contributed to fire spread.

Any 10 of the bulletins listed below may be bought for only $4.00. Any 20 of the fire records cost only $8.00. To obtain copies simply fill out and mail the order form to NFPA.

F 11-56

Quantity

..... Garages (FR54–1)
..... Supermarkets (FR54–2)
..... Foundries (FR54–3)
..... Oil Piers (FR54–4)
..... Grocery Warehouses (FR54–5)
..... Farm Property (FR54–6)
..... Department Stores (FR54–7)
..... College Dormitories, Fraternities and Sororities (FR54–8)
..... Food Canneries (FR54–9)
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..... Truck Terminals (FR55–2)
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..... Bakeries (FR55–8)
..... Gasoline Service Stations (FR55–9)
..... Motion Picture Theatres (FR56–1)
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..... Churches (FR56–4)
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Name .....

Address .....

City..... **State**.....

Total Amount Enclosed $.....

Please Bill.....

"THE COMMANDO"

Weighs only 67 ounces (including battery)... but this rugged light has A HALF-MILE BEAM!

Here's a new combination of power and convenience. The dry-cell "Commando" is a compact 67 ounces — ready for fast, easy action with its combination handle and shoulder sling. Yet its brilliant beam slices through darkness for half a mile!

"The Commando" is a quality light in every detail. Stainless steel construction for good looks through the roughest jobs in any weather. Water-proof battery that gives 5 hours of continuous use. Non-scratch lens. Trouble-free switch. Built-in compartment for spare bulb. Available with reflective "Scotchlite" jacket.

. . . Features like those make "The Commando" economical for any department and *ideal* for the volunteer. It's the perfect dry-cell counterpart of the famous Wheat Rechargeable Spotlight. Both are dependable products of Koehler — quality name in portable lighting for over 40 years.

For information, write to Department F

KOEHLER MANUFACTURING COMPANY
"40 years of quality" · Howland Place, Marlboro, Massachusetts

WATER when and where you want it!

with HAREDIKES
Portable Canvas Water Tanks
THE ECONOMICAL AND EFFICIENT WAY TO CARRY AND STORE WATER.

ON THE JOB - ON THE SPOT
KEEPING AMERICA GREEN

EXCLUSIVE FEATURES
- Self Supporting
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Available in 150 & 300 gallon sizes

A WATER SUPPLY AT THE SCENE OF THE FIRE

Write TODAY for Full Information and Price List
HARODIKES INCORPORATED
NORTH DIGHTON, MASSACHUSETTS

Semi-Closed Rescue Truck

ASK SHARPSVILLE TO HELP YOU SET YOUR SPECIFICATIONS HIGH ENOUGH TO GUARANTEE SATISFACTION— AT BUDGET COST

Closed Squad Car

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BUILDERS OF SERVICE, CRASH AND LADDER TRUCKS
VOLUME AND HIGH-PRESSURE PUMPERS
SQUAD AND EMERGENCY CARS • TANK TRUCKS

Custom Challenger

Pressures Due to Combustion

A PAPER entitled "Pressures Developed by Rapid Combustion" has been prepared by the Factory Mutual Engineering Division, 1151 Boston-Providence Turnpike, Norwood, Massachusetts. It consists of 28 pages, 8½ by 11 inches, and may be obtained directly from the Engineering Division at the above Norwood address for $1 per copy.

It reports an investigation at the Factory Mutual Laboratories of pressures developed by rapid combustion. The publication is being made available in the belief that architects, plant engineers, and equipment designers may find the pressure, combustion rate and vent area relationship useful in their work.

SPECIALS IN GOV'T SURPLUS

Fire Trucks

2 Seagrave Models 80-E with 750 GPM pump, $750.00 each

1 Mack 1½-ton Fire Truck equipped with 500 GPM Hale Pump — 1 Mack 1½-ton Fire Truck equipped with Hardie Piston Type Hi Pressure Pump, $950.00 each. These machines are good sound fire trucks — need minor repairs to pumps such as seals, bearings, etc., due to long period of storage.

2 Chrysler motor-driven skid mounted pumps, 500 GPM at $450.00 each.

(All prices F.O.B. Atlanta)

For further information, photographs, etc., call, wire or write

FULTON AUTO EXCHANGE

2235 Stewart Ave., S.W. Atlanta, Ga.

Telephone PO 7-8606

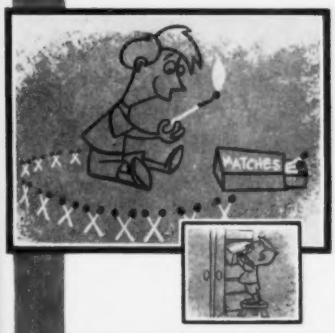
We regret to announce that Harry K. "Smoky" Rogers died in an Evanston, Illinois, hospital on September 13. He was 67 years old. For more than three decades Smoky's name and personality made a lasting impression throughout the fire service of North America, while his entertaining methods of fire prevention education won him the hearts of several million children.

Prior to joining the Fire Prevention Department of the Western Actuarial Bureau in Chicago, Illinois, in 1925, Smoky had already secured large audiences in Canada through his creation of "Jumpin' Jack," a fire clown. After joining the Bureau to serve as an instructor for fire departments participating in State training programs, he devoted his special talents to developing "Smoky the Fire Clown." This, coupled with his talent of being an amateur magician, brought him national attention from the fire service and the public. He had more than comedy to offer, however, for he made significant contributions to firemen's training, including active participation in the NFPA's Committee on Firemen's Training. He is credited with suggesting the first Fire Department Instructors' Conference, an annual meeting held each February in Memphis, Tennessee, which has grown to be one of the most significant meetings of the fire service.

He was affiliated with a number of civic organizations including the Skokie Valley Shrine Club, a Masonic Lodge, the Kiwanis Club, and the American Legion.

FIRE AND FOOLS Don't Mix!

as clearly demonstrated in...



WALT DISNEY'S

"I'm NO FOOL with FIRE"

Fully animated—16mm Sound Film—Color by Technicolor
Superb Entertainment with Fun, Music, and Instruction

Here in 8 packed minutes you replace hours of conventional lecturing on fire prevention. Here you get that basic message thru to young audiences—FIRES CAN BE PREVENTED!

Awarded "Highest Honors" by National Committee on Films for Safety in 1956 competition.

Disney's great character, Jiminy Cricket, long famed as Pinocchio's conscience, traces man's reliance on fire through the ages—emphasizes the importance of observing specific fire safety rules—and conducts a novel fire prevention contest between Y-O-U and a Common Ordinary Fool.

Available under long term lease $125 ($100 to non-profit organizations)
Preview prints may be secured when leases are contemplated.
WALT DISNEY PRODUCTIONS— 16mm Division, Dept. F-1 Burbank, Calif.

© Copyright Walt Disney Productions

IN YOUR HANDS...

A FIREFIGHTER'S LIFE

If you hold in your hands the responsibility of selecting firefighter's equipment, you'll want the extra margin of protection in Bullard fiber glass fire helmets. Compare other helmets for strength and resiliency . . . you'll prove to yourself that fiber glass helmets are safer, more durable—choice of molded-in colors.

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E. D. BULLARD COMPANY

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275 Eighth Street
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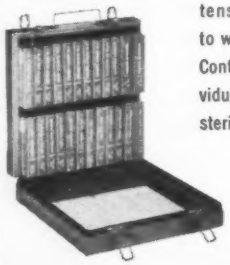
EVERYTHING BULLARD IN SAFETY

T. M. REG. U. S. PAT. OFF.

FIRST AID KITS Packed in heavy duty case with an air tight sealer that protects first aid supplies even if subjected to intensive exposure to water and dust. Contents each individually wrapped in sterile unit packs.



Instructional Film

A NEW 16 mm film to supplement instruction of industrial fire brigades has been released by Audio Productions, Inc., Film Center Building, 630 Ninth Avenue, New York 36, New York. Titled "The First Five Minutes," it outlines basic duties of industrial fire brigades in preventing fires from starting or spreading.

The 27-minute, black and white, sound film features narration by Chief Henry G. Thomas of the Hartford, Connecticut, Fire Department, Vice President of NFPA. It describes Class A, B and C fires and the various methods and agents used in extinguishment. The film also shows a typical industrial fire brigade in action during a plant emergency, pointing out the need for calling the local municipal fire department and taking other precautions to protect life and property.

Copies of the film may be purchased from the producer at the above address for $77.00 plus postage.

Fire Losses in 1955

DURING 1955, fire losses in the United States reached a total of $1,140,768, an increase of 124 million dollars over the previous year's total. This is reported in the annual study of "Fires and Fire Losses Classified," published in the October, 1956, NFPA *Quarterly*.

There were an estimated 1,977,950 fires of all types in the U.S., including 811,800 building fires which caused $943,551,000 damage. The report also states that the 1955 total of building fires is up 4.8 percent over the previous year, with the dollar loss of such fires up 7.8 percent over the 1954 total.

Last year's leading causes of fire were: careless smoking and matches — 122,000 fires; defective or overheated cooking and heating equipment — 100,500 fires; electrical — 99,900 fires; rubbish, ignition unknown — 59,400 fires; flammable liquids — 45,500 fires; lightning — 44,800 fires; defective or overheated chimneys and flues — 37,500 fires; children and matches — 29,900 fires.

Reprints of "Fires and Fire Losses Classified" are available from the NFPA Publications Department for 25 cents per copy.

THANK YOU, *Ladies!*

How often has your Department been indebted to its Ladies' Auxiliary? How often have you wanted to give them the recognition and the "Thank you" they deserve?

In response to many requests, City Plaque Shop (formerly a division of City Pattern Shop, Inc.) has now added this new feature to its firemen's line.

Magnificent new plaques like the one shown below provide the perfect means of saying "Thank you, Ladies!"

SOLID CAST BRONZE ON HAND-RUBBED CHERRY

Overall size: 10 x 16 inches

"Thank you" plaques are also available for Chiefs, Commissioners, Presidents and all other officers, and for Life Members and Charter Members. There are memorial plaques for deceased members, and special service plaques for any occasion.

For complete information on the type of plaque you need, write today to:

CITY PLAQUE SHOP
BOX 6, EASTWOOD STA.
SYRACUSE, NEW YORK

National Fire Codes

THE new 1956 editions of the National Fire Codes have now been published. The complete set consists of six clothbound 5¾ by 8⅝-in. volumes, priced at $6.00 apiece, with each volume containing all the NFPA standards pertaining to its title.

Included in these volumes are the 32 new or revised technical standards which were adopted during the recent 60th NFPA Annual Meeting in June.

A set of the National Fire Codes provides a valuable, up-to-date reference source for fire chiefs, fire marshals and fire prevention bureau personnel, and is a useful addition to a fire station library particularly for fire fighters who will be taking promotional examinations. Listed below are the contents of the individual volumes.

Volume I — "Flammable Liquids and Gases" (35 standards, 860 pages); Volume II — "Combustible Solids, Dusts, Chemicals and Explosives" (35 standards, 616 pages); Volume III — "Building Construction and Equipment" (33 standards, plus an informative discussion of building codes and references to modern codes, 704 pages); Volume IV — "Extinguishing Equipment" (31 standards, 1024 pages); Volume V — "Electrical" (The National Electrical Code, new 1956 edition plus six other NFPA electrical standards and a digest of the electrical provisions of 69 other NFPA standards, 704 pages); and Volume VI — "Transportation and Miscellaneous" (23 standards on air, marine, bus and truck transportation and salvage, plus a comprehensive review of applicable government regulations, 528 pages).

A special discount is available to NFPA member fire departments and individual Associate Members. If full payment is sent with the order requesting any or all of the volumes, 25 percent discount is granted. Thus, each volume may be purchased for only $4.50, or the entire set may be bought for $27.00, providing full payment is sent with the order by the fire department or individual who retains membership in NFPA.

The Codes may be ordered from the NFPA Publications Department, 60 Batterymarch Street, Boston 10, Massachusetts.

YESTERDAY...
Fires Were Fought by DEFENSE

1931... Firemen are shown battling a four-alarm fire of possible incendiary origin which destroyed a cooperage plant and warehouse in California early today, doing an estimated $100,000 damage and injuring two firemen. Great clouds of smoke and flame from the fiercely burning structure covered a quarter of a block. (Int. News Photo)

TODAY...
IT'S FIRE ATTACK!

Scott Air-Paks
ARE FIRE ATTACK EQUIPMENT!

YOURS IS A **FIRE ATTACK** DEPARTMENT IF YOU HAVE SCOTT AIR-PAKS ON EVERY FIRE TRUCK

As early as 1948 the editor of Fire Engineering urged more concentration on *FIRE ATTACK* and less on FIRE DEFENSE. ". . . Lack of respiratory protective equipment . . . has not only been responsible for slowing up *FIRE ATTACK* but has resulted in the incapacitation of too many good firefighters."

Today SCOTT AIR-PAKS get men in fast for efficient *FIRE ATTACK* with complete breathing safety! Result, more lives saved and fire losses reduced to a minimum. Take steps NOW to make yours a *FIRE ATTACK* department. Write for complete information.

VISION UNLIMITED

New Scottoramic Face Mask now available for all Scott equipment, (standard on most models), and for replacement on your present breathing apparatus.

SINCE 1932 Scott FOR SAFETY - FOR SERVICE

SAFETY EQUIPMENT DIVISION
SCOTT AVIATION CORP.
236 ERIE STREET LANCASTER, N. Y.
Canada: Safety Supply Co., Toronto — Branches in principal cities
Export: Southern Oxygen Co., 15 West 57th Street, New York 19, N. Y.

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Easy to use Stream Selector. You set your stream, 30°, 60°, 90°, or straight stream before you turn on the water. Especially valuable in ladder pipe operation. You see exactly what you're doing at all angles . . . because Stream Selector is visible for 360°.

- **Polished Brass or Chrome Plated Brass.**
- **VERSATILE—Use on ladder pipes, deluge sets, deck pipes and monitors.**
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- **"O" ring seals for easy adjustment and years of trouble-free service.**
- **ROCKER LUG—Easy positive attachment.**

SIZES

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Style No. 1245

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2500 G.P.M.
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AKRON BRASS
FIRE FIGHTING EQUIPMENT

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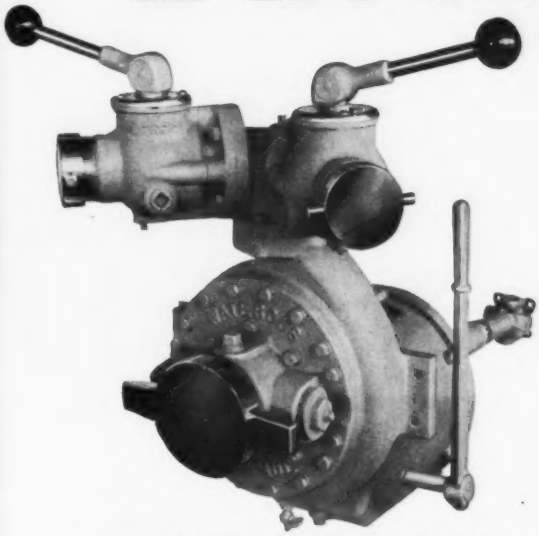
AKRON BRASS MFG. CO., INC. • WOOSTER, OHIO

A HOWE PUMPER

gets the job done...

FASTER



Capacity is 500 GPM or 600 GPM. Impeller shaft bearings sealed from water by self-adjusting, corrosion resistant seal. Fully ball bearing equipped.

This HOWE pumper, with front mounted pump, has far greater flexibility. The pump can be operated while the truck moves. This is especially important in fighting grass fires. In addition, there is more tank room . . . for rural and suburban use. The single-stage, centrifugal Waterous pump has helical, constant mesh gears for quiet operation, long life. HOWE provides the proper gear ratio to operate at moderate gear speeds, eliminating need for auxiliary cooling of the gear case. The rugged single plate, dry, automotive type clutch may be engaged or disengaged at any speed. Independently operated ball type 2½" discharge valves are locked in position, operate at any pressure. Phone, write or wire HOWE *before* YOU buy.

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Member FAM (Fire Apparatus Manufacturers Association)

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"dependable fire apparatus since 1872"

FIRE APPARATUS COMPANY

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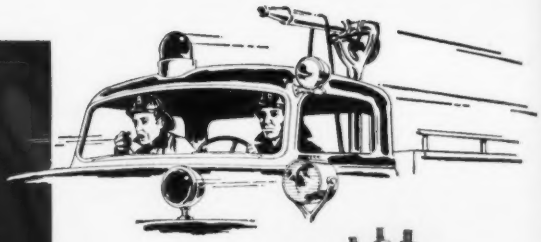
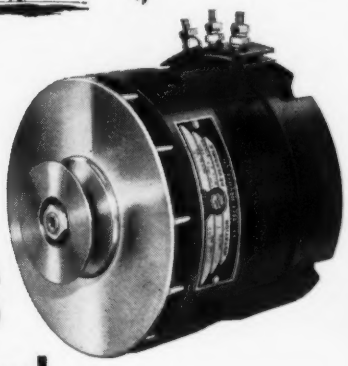
BELOW: PUMPER IN ACTION . . . ROLLING AND PUMPING

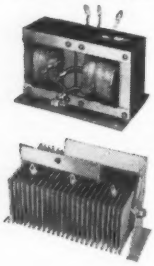
Leece-Neville





AC-DC ALTERNATOR SYSTEMS Guarantee the Current You Need to Get to the Fire... and to Fight the Fire

110 VOLTS FOR POWER TOOLS, LIGHTS



Installation of a Leece-Neville Transformer and 110 volt Rectifier with your L-N Alternator will provide up to 1200 watts of 110 volt d.c. current for spot and flood lights, half-inch drill, power saw etc. Send for special bulletin.

A GENUINE L-N ALTERNATOR AT A SENSATIONAL LOW PRICE

For loads up to 60 amps at 6 volts or 50 amps at 12 volts, see the new L-N Standard Alternator System that costs *less* than "extra" output d.c. generator.

Sirens, lights and 2-way radio make a heavy electrical load that can drain the battery. Leece-Neville Heavy-Duty Alternators, which replace conventional d.c. generators, have the capacity to carry the load: up to 95 amperes for 6 volt systems; to 180 amperes for 12 volt; to 100 amperes for 24 volt.

At the fire, L-N Alternators produce up to 40 amperes with the engine idling, keep batteries "up" and permit use of 2-way radio.

THE ORIGINAL AC-DC GENERATING SYSTEM—RECOGNIZED EVERYWHERE

Since 1946 more and more Fire Departments have made L-N Alternators standard. Some of these are Atlanta, Boston, Buffalo, Chicago, Cleveland, Dallas, Denver, Detroit, Los Angeles, Miami, Montreal, New York, Pittsburgh, Toronto, and many others, large and small.

Be sure to specify Leece-Neville on new apparatus and in your modernization program. For all the facts, and name of your L-N Distributor, write The Leece-Neville Company, Cleveland 3, Ohio. *Distributors in principal cities . . . Service Stations everywhere.*

YOU CAN RELY ON Leece-Neville

Automotive Electric Equipment Since 1909

TRUCK · BUS · DIESEL · INDUSTRIAL · PASSENGER · RAILROAD · MARINE · OFF HIGHWAY

ALTERNATOR SYSTEMS

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SWITCHES

SMALL MOTORS

M-S-A CHEMOX.® Complete breathing protection in oxygen-deficient or unbreathable atmospheres. Pure oxygen, released from the replaceable chemical canister the instant the wearer breathes, continues automatically in accordance with the breathing demands. Minimum of 45 minutes' protection under rugged working conditions.

The Chemox is light—only 13½ pounds; comfortable. Canisters can be stored indefinitely—are always ready. M-S-A "Cleartone" Speaking Diaphragm, permits clear communication between mask wearers.

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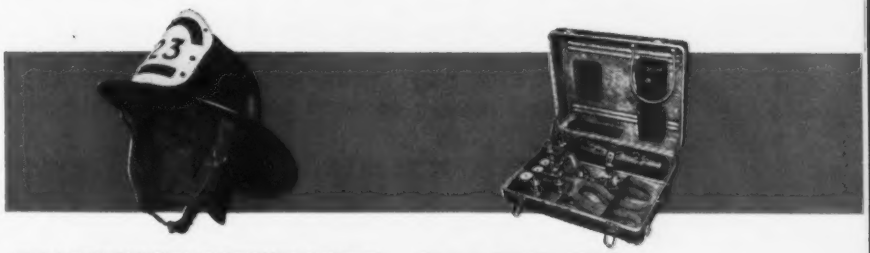
M-S-A "ALL-SERVICE" MASK.® For fire-fighting efforts in air contaminated with smoke and gas, but where sufficient oxygen is present to support life, the "All-Service" Mask assures dependable breathing protection to the wearer. Unit is designed for freedom of movement and wearing comfort. "All Vision" facepiece, combined with M-S-A "Cleartone" Speaking Diaphragm for clear speech transmittal are additional features that make this mask ideal for effective fire fighting. Each "All-Service" mask comes in a strong carrying case; ample room for extra canisters.

INCREASE YOUR FIRE-FIGHTING EFFICIENCY AND SAFETY WITH PROVED M-S-A® EQUIPMENT

Providing your department with the best possible equipment is a big step forward in fire-fighting speed and safety. Firemen, confident of the equipment they wear and have available in case of injury, concentrate fully on the job to be done. M-S-A products for Fire Departments are known everywhere for the confidence they give to fire-fighters. Some of our equipment is illustrated and described here. If you would like complete information, write for our Fire Department Catalog. You'll find it profitable reading.



M-S-A STREAMLINED FIREMAN'S HELMET
Molded laminated plastic shell takes bumps and blows; withstands water, oil, heat; provides high dielectric strength. Streamlined design; shields are of tough, full-grained leather; zipped-in winter liner for all-weather comfort.

M-S-A PNEOLATOR
Assures maximum chances of recovery in all cases of arrested breathing. Automatically provides oxygen at preselected amount, pressure. No suction cycle—exhalation takes place by normal passive return of respiratory muscles.

M-S-A FOILLE SPRAY KIT
Four aerosol sprays for quick, effective application to burned areas. Aerosol application is fast, effective, always ready. Contains a complete assortment of first aid dressings and accessories. Weatherproof steel case.

M-S-A FIRST AID KIT
Unit packages are individually wrapped in tear-taped cellophane to protect against dirt, dust and moisture. All-weather steel case design. Treatments contained in unit packages for quick location, individual treatment.

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At Your Service: 76 Branch Offices in the United States
MINE SAFETY APPLIANCES CO. OF CANADA, LTD.
Toronto, Montreal, Calgary, Edmonton, Winnipeg, Vancouver, Sydney, N.S. • Representatives in Principal Cities in Mexico, Central and South America
Cable Address: "MINSAF" Pittsburgh

The Signal Should Be SAFA The Signal Should Be SAFA

Verbal Messages are often MISUNDERSTOOD

Use Telegraph . . .

be safe with a SAFA system

In any language the Little Red Box means fire...

Your silent watchman 24 hours a day.

Its simplicity of operation and dependability enables even the excited person to send the message with no misunderstanding.

A silent watchman in buildings with interior fire alarm systems connected to master fire alarm boxes.

The telegraph fire alarm system is owned and operated by the City with its own personnel operating, maintaining and keeping system in service 24 hours a day.

OUR TECHNICAL KNOW-HOW IS AT YOUR DISPOSAL.

SAFA ALARM DIVISION, INC., THE *Fyr-Fyter* COMPANY

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VERSATILE DESIGN

240 H.P. – 750 GPM Pump – 600 Gallon Tank
for
Roadability – Intown pumping – Rural protection

MAXIM combines basic proven equipment to fit your terrain and fire fighting needs.

MAXIM MOTOR COMPANY

MIDDLEBORO, MASSACHUSETTS

1059 ITEMS from a SINGLE SOURCE!

Fyr-Fyter offers you the most complete line of quality fire extinguishers and fire department equipment in the industry!

Fyr-Fyter is the largest single source for Underwriters' approved portable fire extinguishers, fire hose, nozzles, couplings and other brass goods, pumps, clothing, ladders, warning and signaling devices, first aid kits, masks and breathing apparatus! Select from a practically limitless list of extinguishers and equipment that meet all the needs of *municipal, industrial* and *commercial fire departments.*

All of these products are available through Fyr-Fyter sales and service representatives . . . the largest sales force in the industry! They are fire protection specialists with knowledge, experience and training to offer counsel and make recommendations on specific problems. They represent a company that has enjoyed a nationally respected reputation for quality products since 1916.

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PLACE ONE ORDER . . . PAY ONE BILL!

TEAR OUT THIS COUPON AND MAIL WITH YOUR LETTERHEAD TODAY!

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FF-8

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221 CRANE STREET, DAYTON 1, OHIO
REPRESENTATIVES IN PRIMCIPAL CITIES
OUR 40th YEAR OF MANUFACTURING . . . THE MOST COMPLETE LINE IN INDUSTRY

BRANCH OFFICES: NEW YORK, BOSTON, PHILADELPHIA, CHICAGO, ATLANTA, DALLAS, SAN FRANCISCO, PORTLAND, SEATTLE

IT'S SCOTCHLITE

ACTUAL SIZE • Apply on bumper, rear glass or trunk door

Comes in Red Amber or Blue

IDENTIFY YOUR PERSONAL CAR

- It's your STANDARD FIRE EMBLEM "Sticker". Also available on metal plates.
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- It gives the name of YOUR DEPARTMENT.
- It LOOKS NICE on your car — DAY OR NIGHT.

STICKERS WITH YOUR DEPT. NAME, $1.00 each — METAL PLATES, $1.50 each

Agents wanted: Orders will be filled on a cash in advance basis unless good credit references are furnished for open account dealings.

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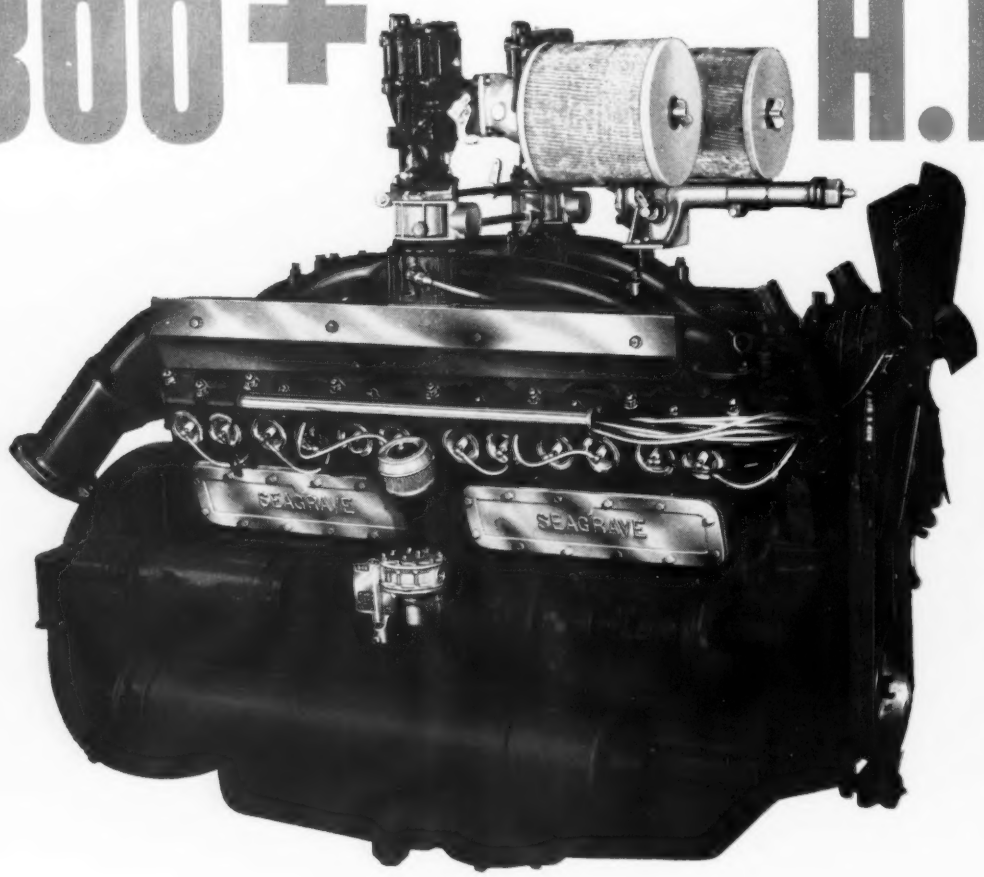
SEAGRAVE V-12 300+ H.P.



The Most Powerful Engine Made Exclusively For Fire Service

An abundance of unfailing, dependable power is a vital necessity for modern fire service. . . . And the new Seagrave 300+ H.P. V-12 is proving it can deliver such power effortlessly and for hour after hour. . . . This mighty engine was designed by Seagrave engineers and is built by Seagrave skilled mechanics exclusively for Seagrave Fire Apparatus. It is guaranteed by Seagrave and is Seagrave serviced throughout its entire lifetime.

This new Series 900 V-12 naturally outclasses and outperforms any other engine in fire service. It is the result of Seagrave's more than twenty years experience in producing V-12's. It is another indication of Seagrave's unchallenged leadership.

THE SEAGRAVE CORPORATION
Columbus, Ohio

SEAGRAVE **THE GREATEST NAME IN FIRE APPARATUS**

Chief T.P. Treadwell of Fort Collins, Colorado

(Winner of 1st place in fire prevention in cities of less than 20,000)

SAYS:

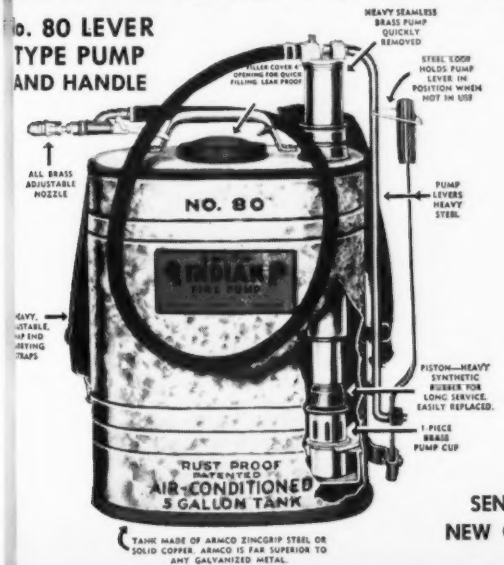
"INDIAN FIRE PUMPS are an indispensable fire fighting tool!"

We are proud of the fact that INDIAN FIRE PUMPS have played a part in enabling the city of Fort Collins, Colorado to win many awards for fire prevention. Members of Engine Co. No. 1 are shown here with their INDIANS.

No. 90 SLIDING PUMP TYPE

All Seams are Electric Welded — no leakage. Pump throws 30 ft. pressure stream or nozzle adjusts for spray. Strongly built — lasts for years. Many INDIAN FIRE PUMPS over 20 years old are still in service.

No. 80 LEVER TYPE PUMP AND HANDLE


HEAVY SEAMLESS BRASS PUMP QUICKLY REMOVED
STEEL LOOP HOLDS PUMP LEVER IN POSITION WHEN NOT IN USE
ALL BRASS ADJUSTABLE NOZZLE
PUMP LEVERS HEAVY STEEL
NO. 80
INDIAN FIRE PUMP
PISTON—HEAVY SYNTHETIC RUBBER FOR LONG SERVICE. EASILY REPLACED.
1-PIECE BRASS PUMP CUP
RUST PROOF PATENTED AIR-CONDITIONED 5 GALLON TANK

TANK MADE OF ARMCO ZINCGRIP STEEL OR SOLID COPPER. ARMCO IS FAR SUPERIOR TO ANY GALVANIZED METAL.

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GEN-E-MOTOR
PORTABLE ELECTRIC POWER

GASOLINE DRIVEN GENERATING PLANTS

MODEL BHA 15L
LIGHT WEIGHT
1800 WATT
UNIT ON SKID

For floodlighting, radio, pumps, blowers, rescue apparatus . . . dependable emergency power *when and where you need it* with Pioneer, light weight portable generators.

Pioneer generators require little space, are ruggedly constructed. Models **BHA-20L,** 2300 Watts, and **WHA-25L,** 2800 Watts, skid mounted as above for easy handling.

WRITE TODAY for new catalog and prices on 250 to 3600 watt units designed for Fire Department use.

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5832 West Dickens Ave., Chicago 39, Illinois

In addition to conventional safety coat and hat attachments all

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No longer is it necessary to fumble with pins and catches. Our BADGE and MONEY-CLIP combination attaches or detaches without effort to belt, shirt or coat pocket. Its flat construction reduces bulkiness when placed in a wallet or case.

For presentations and awards. For off duty use and others in street clothing.

See your dealer for our complete selection of Badges available with money-clips, as well as with standard coat and cap attachments.

Our new illustrated catalog is available to you upon request. Write to Dept. 20.

NIELSEN • RIONDA INC.
40 JOHN ST., NEW YORK 38, N. Y.

To Our Readers . . .

THIS November issue of FIREMEN magazine will be read by 45,000 persons throughout the world! It will reach more than 2,200 departments which have Fire Department Membership in the National Fire Protection Association. It will be read by more than 3,000 fire chiefs who either have individual membership in NFPA or who receive the magazine through their fire departments' memberships. Approximately 25,000 fire officers and fire fighters, and 3,000 persons from industrial plants, airport fire brigades, insurance organizations and other groups will also receive the magazine through membership in NFPA.

In addition, this Fire Chiefs' Convention issue is being sent to every paid, call and volunteer public fire department in the United States, and to many more in Canada. Purpose of this special circulation is to encourage non-member fire departments to join NFPA and to make use of the many technical standards and reference books on fire control published by the Association.

For all of our readers, this issue can be useful for many months to come. Through the advertisements of the 65 manufacturers who chose this magazine to tell about their products, these pages display a wide selection of the latest and best equipment available for fire detection and fire control. Chiefs and other fire department personnel concerned with purchase of apparatus and equipment thus have an opportunity to read and compare the basic descriptions of modern fire fighting and fire control equipment. If you want further information on these products, a note to the manufacturers will bring a prompt reply.

And by the way, don't let this issue of FIREMEN hide in your desk drawer. Pass it around to all of the fire fighters in your department. If they want subscriptions to the magazine for next year, just add their names and addresses to the application blank when you renew membership in NFPA. And if you, or your fire department, does not have NFPA membership, read the back page of this issue, send in the blank, and get FIREMEN for all of your men.

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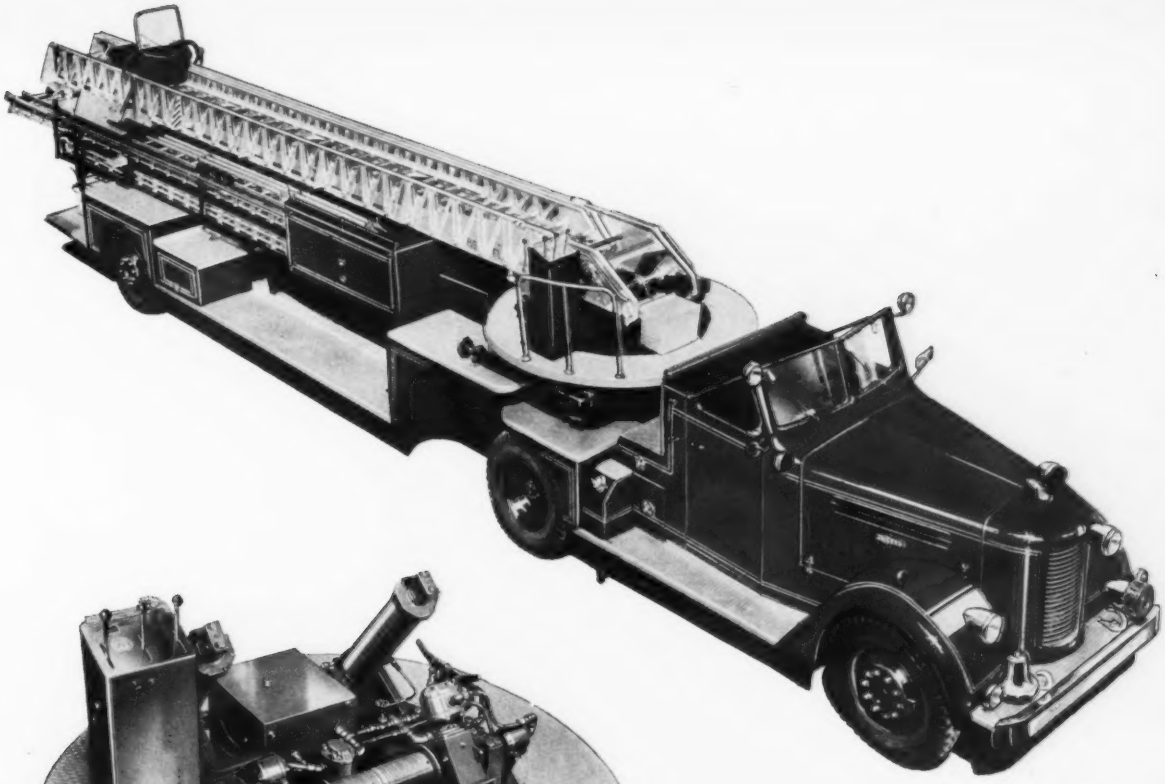

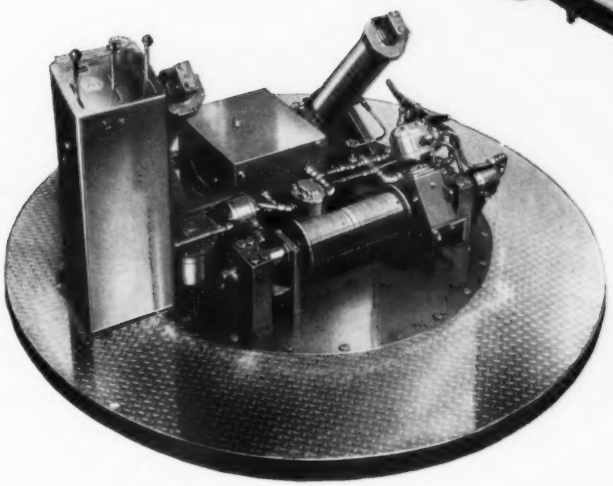

The Pirsch Full-Hydraulic Aerial Hoisting Mechanism is available on Pirsch Intermediate and Pirsch Senior Aerial Ladder Trucks; for 65′, 75′, 85′ and 100′ Pirsch Aerial Ladders.

The LATEST and BEST in Hydraulic Aerial Hoists

The new Pirsch Full-Hydraulic Aerial Ladder Hoisting and Operating Mechanism offers the last word in modern design and incorporates the latest and best in the way of hydraulic application to the operation of aerial ladders.

Either the Pirsch Hydro-Mechanical Aerial Ladder Hoisting Mechanism (America's first all-powered aerial hoist) or the new Pirsch Full-Hydraulic Hoisting Mechanism are offered as optional equipment on Pirsch Aerial Ladder Trucks.

WRITE FOR OUR BOOKLET "FACTUAL INFORMATION ABOUT METAL AERIAL LADDERS"

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"BUILDERS OF AMERICA'S FIRST ALL-POWERED AERIAL LADDER TRUCK AND AMERICA'S FIRST 100′ AERIAL LADDER"

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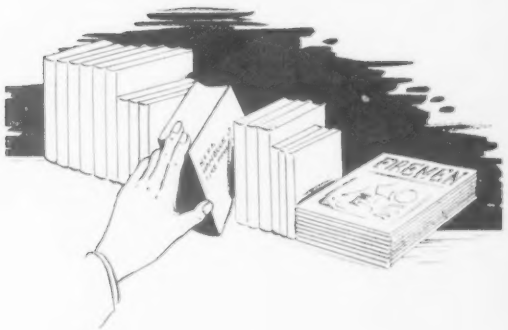
develop the habit of USING THE BEST!



There are substitutes for experience! Preparation and knowledge are two.

Experienced fire officers and men can make good decisions when familiar problems arise. But when the unfamiliar and unexpected situation comes along, their abilities are limited by the extent of their knowledge and preparation accumulated through study and experience.

Top-notch men of the fire service are not content to work in their profession simply on the basis of past experiences in fires they fought or saw. They have inquiring minds. They want the best authoritative information on fires that happened in other communities. They want to know what other fire departments have developed in the way of new techniques of fire control, personnel and departmental administration, fire prevention, selection and use of apparatus and equipment, and those other numerous functions of the modern, progressive fire department.

These men demand, and get, the best up-to-date information on the multitude of problems confronting the fire service today.

That's why thousands of fire chiefs are developing good reference libraries for their officers and fire fighters. That's why fire departments of Houston and Dallas, Texas; Los Angeles and Los Angeles County, California; Boston, Massachusetts; Des Moines, Iowa; Memphis, Tennessee; and many other municipalities take NFPA memberships for all of their fire stations. It's the reason for the Chicago, Illinois, Fire Department getting NFPA memberships for 47 of its top officers. It shows why the Garden City, New York, Fire Department orders 116 subscriptions to FIREMEN for its members, the New Hyde Park, New York, Fire Department orders 205 subscriptions, and why hundreds of other fire departments follow these examples.

Right now, there are nearly 17,000 associate members in NFPA, including nearly 2,300 paid, call and volunteer fire departments. More than 30,000 fire fighters, industrial personnel and others interested in fire control are subscribing to FIREMEN magazine. They rely on the best, complete, authoritative information that comes to them month after month through membership in NFPA.

Are the members of your fire department preparing for fires to come? Are they broadening their knowledge of fire problems through membership in the National Fire Protection Association? Are they in the habit of referring to the best publications on fire control?

Or are they waiting for "experience" to bring them the answers?

F11-56 **NATIONAL FIRE PROTECTION ASSOCIATION**
60 Batterymarch Street, Boston 10, Massachusetts

Please send me complete information on how NFPA Fire Department Membership may be put to good use by my fire department.

Name .....

Address .....

City ..... State .....

Use this form to get full information on NFPA for your fire department today!